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RELATIONSHIP BETWEEN VITAMIN B COMPLEX INTAKE AND WORK OUTPUT IN TRAINED SUBJECTS

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Factual evidence that is slowly being accumulated both in this country and in Canada, although it is as yet meager, shows that nutritional deficiency disease prevails in many parts of the country.[1] Sebrell [2] believes that it is no exaggeration to say that at least one third of the American population is eating a diet which is not adequate in all respects. Basing our judgment on the requirements which modern nutritionists consider as optimum nutrition, not mere adequacy, we believe that widespread improvement in health is possible. The evidence of malnutrition is not restricted to low income groups or families on relief but is just as apt to be found in the middle and upper class families.

Although it was suspected that the average American diet might be well below the optimum in certain essential nutrients, there was no means of proof available until the classic publication of Stiebeling and Phipard [3] appeared on the diets of employed workers' families, which has been widely quoted. They found only 26 per cent of more than 2,000 workers' families classified as having good diets, the diets of 45 per cent were fair and those of 26 per cent were poor. In respect to these studies, it is well to remember that these were the families of employed workers and not the studies of the unemployed or the families on relief. In addition to this fact, the percentage of poor diets would have been even greater if the statistical data of the diets studied had been measured by the present yardstick of the Food and Nutrition Board's recently recommended daily allowance.

Attention has been called [4] to a greater need for more thiamine under conditions of increased strain and physical activity. There are thousands of workers in boomtown communities under greater strain and activity than they have been for years. These people have been moved from their homes into sections not prepared either to house or to feed them properly. Among other factors contributing to poor dietary intake among workers are soft drinks and candy. Many persons arrive at work having had a breakfast of only coffee and a sweet roll. Later they make a widely selected midmorning and midafternoon snack of soft drinks or candy. Large war production plants have been built so fast that feeding facilities are entirely inadequate, and rather low grade restaurants and stands have sprung up of necessity. Industry is beginning to realize the value of optimum intake of nutrients for promoting efficiency and reducing absenteeism.

Keys and Henschel [5] at the University of Minnesota carefully tested the value of supplementing a United States Army ration with little amounts of available vitamins. It was concluded that supplementation of an adequate diet with additional vitamins serves no useful purpose. We [6] likewise found no influence on recovery from fatigue or increase in muscular efficiency by parenteral injections of vitamin concentrates in any persons already on an adequate diet.

Such evidence demonstrates the fact that vitamin B complex supplementation added to an already adequate diet has no influence on work output, recovery or other manifestations of physical exertion. Some investigators have contended that work output could be enhanced by the supplementation of the diet with one or more components of the vitamin B complex.[7] However, it is possible that the subjects of the latter group of investigators might have been on deficient diets, because no exhaustive studies of the subjects' diet or blood and urine determinations for vitamins were carried out. This may account for the apparent discrepancy between these two groups of reports.

Williams, Mason, Wilder and Smith [8] observed the effect of a thiamine deficient diet on work output. A "chest weight exerciser" was used, but the subjects were not trained. Thus this aspect of the experiment was not well controlled. The diet was not one widely eaten and was deficient only in thiamine. An apparent decrease in work output occurred.

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From the Passavant Memorial Hospital and the Department of Physiology, Northwestern University Medical School.

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It is well known that many people in the United States are existing on diets low, by our present recommended standards, in the vitamin B complex without exhibiting symptoms or signs diagnostic of vitamin deficiency. Does this state of nutrition prevent maximal work output or does the decrease in work output, if it occurs, begin only after the signs and symptoms of vitamin deficiency are well established? In times of war, when manpower should be at peak efficiency, this is especially important to know. If a commonly used mildly deficient diet has a detrimental effect on work output, it then becomes desirable to know the effect of vitamin supplementations. In an attempt to answer some of these questions this experiment was undertaken.

TABLE 1.—*Composition in Four Diets*

Diets	Vitamin A, I. U.	Thiamine, Mg.	Riboflavin, Mg.	Ascorbic Acid, Mg.	Calcium, Gm.	Phosphorous, Gm.	Iron, Mg.
1	13,500	1.80	2.70	176	1.03	1.6	14.0
2	7,700	0.65	0.94	82	0.59	0.97	10.1
3	Fat reduced 50%—isocaloric carbohydrate added						
4	13,000	15.65	6.19	210	0.77	0.9	12.4

METHOD

Four medical students were used. They were provided with board and room in a hospital near the laboratory. They were trained from nine months to one year on a normal, adequet diet the B complex composition of which is shown in table 1 (diet 1). At the end of this period, they were put on a diet deficient particularly in the vitamin B complex (table 1, diet 2). The corn flakes used in the deficient diets were not restored with thiamine, riboflavin or nicotinic acid and the toast and bread used were unenriched. The butter fat of the cream used was approximately 18 per cent. The calculations of the thiamine and riboflavin content of the food used was determined by three methods: First, analyses of each of the items of food were made at various times during the past two years. Second, duplicate diets at intervals were simultaneously prepared and sent to the laboratory for analysis. Bread, milk and other liquids were transferred to a tared bowl and the contents mixed until the bread was disintegrated. The meats, vegetables, fruits and salads, which had previously been passed several times through a meat grinder, were then added. The bowl, which now contained all the constituents of the diet, was again weighed. The composite sample was homogenized in the Waring blender. The entire procedure was carried out as quickly as possible in a cold, darkened room to prevent loss of riboflavin and other vitamins. Determinations of thiamine and riboflavin were made by modifications of the methods of Conner and Straub.[9] The procedures were standardized by adding known quantities of the vitamins to aliquot portions of the diet. Third, the vitamin content of the diet was calculated by using the averages of recently published data. The result of all three methods of calculation was approximately the same. The caloric, carbohydrate, fat and protein values remained essentially unchanged. The subjects were told that they were being put on a high carbohydrate diet and were unaware that the diet was deficient. A typical day's menu of one of the deficient diets is shown in table 2.

TABLE 2.—*Typical Day's Menu of Deficient Diet*

		Grams
Breakfast	Orange juice	100
	Corn flakes	15
	Toast	25
	Butter	25
	Cream	100
	Jelly	10
	Sugar	10
Luncheon	Frankfurter	70
	Potato chips	30
	Bread	30
	Butter	25
	Cream	100
	Apple, raw	130
	Coca cola	one bottle
Dinner	Roast beef	50
	Potato	100
	Bread	30
	Butter	25
	Ice cream	100
	Raspberries	100
	Cream	100
	Sugar	20
	Coca cola	one bottle

After two months on this regimen, half of the fat calories were taken from their diets and replaced by isocaloric amounts of carbohydrate (diet 3, table 1). This high carbohydrate diet was given in an attempt to precipitate more pronounced symptoms and signs of a vitamin B complex deficiency. After three weeks of this modification they were returned to diet 2 (table 1), supplemented with a yeast concentrate given in a lemon and tomato juice mix, thus preventing its recognition by the subjects. This was diet 4 (table 1). They remained on this diet until the conclusion of the experiment, an interval of four weeks.

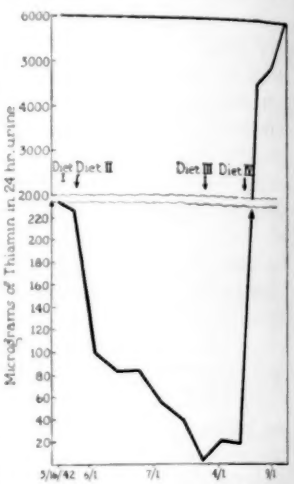

Chart 1.—Twenty-four hour thiamine urinary excretion (subject J. A.).

The subjects were chosen on the basis of their willingness to cooperate and not on the basis of muscular development, the work of the tests being their only source of physical exercise. The work was done three times each week on an electrodynamic brake bicycle ergometer at the rate of 1,235 kilogrammeters a minute, with a pedaling rate of 54 revolutions a minute. The subjects worked to complete fatigue at this rate, rested ten minutes and worked to complete fatigue again. This method of fatiguing the subjects was chosen because it has been demonstrated [10] that the total work output of the double work periods is less variable than the work output of a single work period, and because by this method we are able to study recovery from fatigue. That is, the experiment was so constructed that the second period of work output was almost invariably a fraction of the first, and thus the percentage of recovery from the fatigue following the first period could be calculated. Consequently, we were able to observe the effect of the diets not only on work output but also on recovery from fatigue.

9. Conner, R. T., and Straub, G. S.: Indust. & Engin. Chem. (Anal. Ed.) **13**: 385, 1941.

10. Foltz, E. E.; Ivy, A. C., and Barborka, C. J.: The Use of Double Work Period in the Study of Fatigue and the Influence of Caffeine on Recovery, Am. J. Physiol. **136**: 79-85 (March) 1942.

RESULTS

Thiamine and Riboflavin Levels.—In any protracted dietary experiment in which the subjects are not kept under lock and key, their actual intake may vary somewhat from that calculated. That our subjects adhered to their diets reasonably well is shown by charts 1 and 2, data from subject J. A., which were characteristic of the entire group. During the depletion period the daily urinary thiamine output dropped to levels of from 5 to 35 micrograms and rose abruptly following supplementation of yeast. The daily urinary riboflavin output fell to levels of from 100 to 200 micrograms daily. The thiamine in whole blood fell somewhat but did not become abnormally low at any time during the experiment (chart 3).

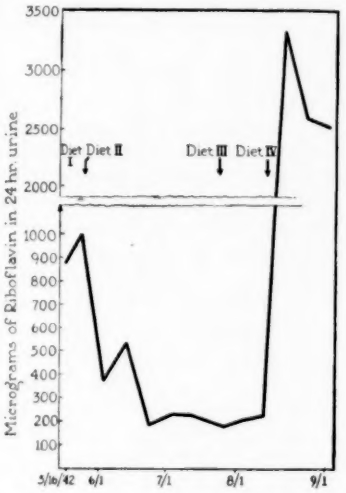

Chart 2.—Twenty-four hour riboflavin urinary excretion (subject J. A.).

Basal Metabolic and Electrocardiographic Studies.—Frequent basal metabolic rates and electrocardiograms were taken. In no subject was a significant change in the basal metabolic rate observed. The electrocardiograms of 2 subjects remained unchanged. Those of the other 2 showed an increase in the PR interval of four hundredths of a second. Even with this increase the intervals were not abnormally long. This change persisted throughout the period of yeast supplementation.

Pyruvic Acid Determinations.—At frequent intervals blood for pyruvic acid determination was drawn between seven and eight minutes after the second work period. There was no appreciable increase in the blood pyruvic acid following exhaustion during the period of the deficient diets 2 and 3. However, if these values are divided by the number of calories of total work output of corresponding days, a significant change is demonstrated. Chart 4 is a graphic representation of milligrams of blood pyruvic acid produced per calory of work done. Thus it is seen that as the deficiency progressed, that is, up to diet 4, more pyruvic acid was produced per calory of work done, and when the yeast concentrate was added less pyruvic acid per calory was produced.

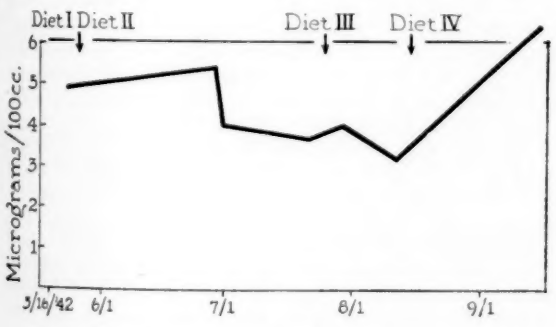

Chart 3.—Thiamine in whole blood (subject J. A.).

Work Output.—The subjects were trained from nine to twelve months on the adequate diet 1. The work output rose during the first three to four months of the training period until it reached a plateau. This plateau was maintained for six to nine months prior to the institution of the deficient diet 2. There was a definite decrease in the work output shortly after the deficient diet was begun. There was a definite increase in work output following the addition of the yeast concentrate to the deficient diet. This increment was shown by all subjects within forty-eight hours following the yeast supplementation. Within four days, the work output of 1 subject had surpassed that which he had done on a normal diet. The work outputs of the other 3 subjects at the end of four weeks of yeast supplementation had increased to approximately what they had been on the adequate diet.

This is illustrated by chart 5, the graph of subject T. N., which is representative of the group. In the upper graph, the top line represents the total work output, the middle line the work output of the first period and the bottom line the work output of the second period. The lower graph represents the percentage of recovery. There was no significant change in the percentage of recovery.

A more detailed consideration of the data obtained on each subject is reported elsewhere by us.[11]

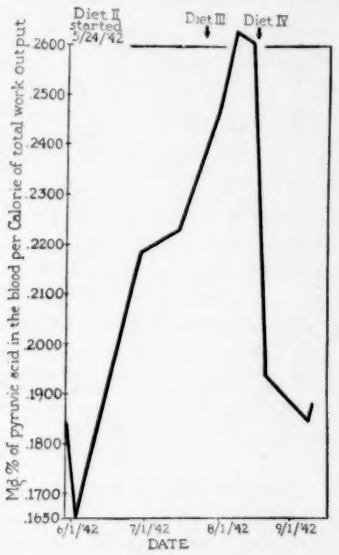

Chart 4.—The relationship of blood pyruvic acid to total work output.

COMMENT

Four subjects who had been existing on a controlled, adequate diet and who had been trained on the bicycle ergometer for from nine months to one year were placed on a diet deficient principally in the vitamin B complex. During the eighty-two days on the deficient diet, the subjects developed irritability, easy fatigability, lack of pep, anorexia and increased leg pain during the work periods, but at no time did they develop any objective physical signs of vitamin B complex deficiency. The twenty-four hour urinary excretion of thiamine and riboflavin dropped to low levels. The blood thiamine remained in the normal range. The blood pyruvic acid following exhaustion was likewise unaffected. However, as the deficiency progressed, the milligrams of pyruvic acid in the blood per calory of work done increased more than 50 per cent. This ratio may prove to be a useful indicator of fairly early vitamin B complex deficiency.

The recommended daily allowances for the various dietary essentials (prescribed by the Food and Nutrition Board of the National Research Council) were set up to serve as a guide for planning adequate nutrition for the civilian population of the United States. We used,

11. Foltz, E. E.; Ivy, A. C., and Barborka, C. J.: The Influence of Vitamin B Complex Intake on the Work Output of Trained Subjects, to be published.

therefore, in our adequate controlled diets (during the training period and establishment of the plateau level of work output) 1.8 mg. of thiamine and 2.7 mg. of riboflavin, which is the recommended daily amount of these special nutrients for moderately active men in health.

The deficient diet was composed of common foods, and the menus (example: table 2) were such as might be found on the tables of about one third or more of the population of the United States. The deficient diets used (diets 2 and 3, table 1) contained approximately 0.65 mg. of thiamine and 0.94 mg. of riboflavin, which is about one third of the recommended daily requirement. This deficient diet produced a definite decrease in work output shortly after it was begun, in spite of the lack of physical signs of a deficiency. All of the changes mentioned returned to normal or better following the administration of the yeast concentrate.

Difficult muscular effort such as the civilian, industrial or Army worker must exert, with consequent greater combustion of carbohydrate, should lead to a greater requirement of vitamins. The use of natural foods to bring inadequate diets to the required level is

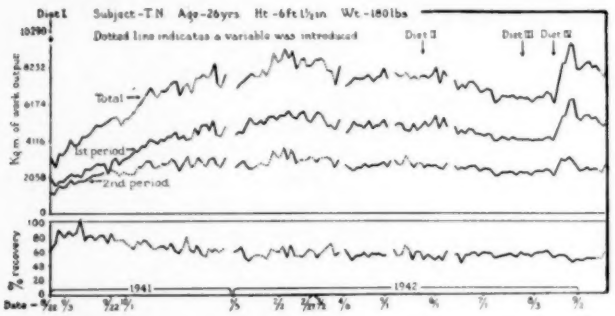

Chart 5.—The graphs here presented of subject T. N. are representative of the group. In the upper graph the top line represents the total work output, the middle line the first period work output and the bottom line the second period work output. The lower graph represents the percentage of recovery.

the ideal solution of the problem. Until this plan shall have become workable, discriminate vitamin administration to the civilian or industrial worker on an inadequate diet is a sound policy.

CONCLUSIONS

1. Diets deficient in vitamin B complex in trained subjects decrease work output.

2. Early mild states of malnutrition, with no objective evidence of deficiency disease, do prevent maximal work efficiency.

3. Diets with about one third (0.65 mg. of thiamine and 0.94 mg. of riboflavin) of the vitamin B complex of the recommended daily requirement do produce subjective symptoms of easy fatigue, irritability, lack of pep, anorexia and increased leg pain during work periods, in spite of the fact that no objective evidence of deficiency disease is present.

4. The ratio of blood pyruvic acid to the total work output increases proportionately as diet deficiency progresses.

5. Subjective symptoms of fatigue, irritability, lack of pep, anorexia and leg pains all disappeared and work output returned to normal or better within a few days following the supplementation of vitamin B complex.

6. Vitamin B complex supplementation added to a vitamin B complex inadequate diet restores work output to efficient levels.

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A PRINCIPLE FROM LIVER EFFECTIVE AGAINST SHOCK DUE TO BURNS

PRELIMINARY REPORT

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Following the development of a method for satisfactorily evaluating therapeutic activity in shock due to burns, various agents, some of which have been proposed for the treatment of shock, have been tested. Our purpose in this preliminary report is to present evidence for a principle from liver which has the activity of significantly decreasing the mortality of rats and mice subjected to severe burns and to describe briefly a method for producing standardized burn shock. Evidence is presented which demonstrates that this factor effective against burn shock, which is present in commercial liver extracts prepared to contain the antianemia principle, is separate and distinct from the antianemia activity.

METHODS

The evaluation of therapeutic agents in shock using the usual shock producing procedures in large laboratory animals is complicated by factors which are difficult to control adequately. It would appear that a satisfactory method should possess the following features: The degree of trauma should be objectively controlled and reproducible; the method should be simple and fast, so that a sufficient number of animals to yield results of statistical significance may be employed under identical conditions; finally, the shock producing procedure should resemble a type of trauma which produces shock in human beings.

During the past year and a half, using 15,000 rats and mice, we have developed a satisfactory shock producing procedure which has permitted evaluation of therapeutic activity in shock due to burns. The basis of the method consists in immersing the entire body surface, except for the head and neck, of etherized rats and mice for definite periods of time into a thermostatically controlled water bath set at scalding temperatures. The degree of trauma inflicted by scalding as evidenced by time-mortality curves is a function of the duration of exposure and the temperature of the bath. By lowering the bath temperature or the period of immersion one lowers the degree of trauma; the converse is likewise true. It has been found that when the degree of trauma is too slight an insufficient number of control animals die and therapeutic activity is not measurable. On the other hand, when trauma administered by scalding is too great, then the animals die rapidly irrespective of treatment. We have therefore attempted to use a degree of trauma intermediate between these extremes and have arbitrarily selected the minimal conditions of immersion duration and bath temperature which would kill most of our control animals in a forty-eight hour period. Survival observations were conducted over a forty-eight hour period following scalding. The experiments were terminated at that time to prevent the effects of infection and other secondary disturbances which later become operative following burns from influencing the mortality curves.

The usual conditions for scalding for our animals which have proved to be satisfactory for evaluating therapeutic activity were an immersion duration of 15 seconds at 60 C. or of 10

Dr. Yellapragada Subbarow of the Lederle Laboratories, Inc., Pearl River, N. Y., gave invaluable aid.

From the Research Laboratory, Cedars of Lebanon Hospital, and the University of Southern California Medical School.

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seconds at 65 C. for mice weighing approximately 20 Gm. and of 10 or 15 seconds at 75 C. for rats weighing approximately 200 Gm. The bath temperature in these experiments varied no more than ± 0.25 degree C. and the intervals of immersion are probably accurate to ± 0.5 second. It should be emphasized that the conditions which proved satisfactory for evaluating therapeutic activity in this laboratory may vary for other strains of animals or under different laboratory conditions. In all instances, therefore, these conditions of immersion duration and bath temperature should be experimentally determined before testing therapeutic agents for burn shock.

In general, the experiments were designed so that the treated and control groups of animals had approximately the same distribution of the sexes, were in the same weight range and were derived from the same strain with identical previous histories. The number of animals in each group varied from 20 to 40 in different experiments. Following the start of the experiment, the animals were not allowed access to food or water.

The therapeutic activity of various agents was evaluated by comparing the time-mortality curves and the calculated average survival time of treated animals with those of suitable control groups. The survival period following scalding was determined by observing the animals at regular intervals, the dead animals being removed and the time of death noted. All animals dying within thirty minutes after scalding were discarded on the basis that death may not have been due to shock but could have been the result of excessive etherization. All animals alive forty-eight hours after scalding were arbitrarily assigned a survival period of forty-eight hours. Rosenthal has recently described a similar method.[1]

After a variable period of time following traumatic scalding, depending on the conditions used, scalded animals show a sharp decrease in skin temperature, exhibit hemoconcentration as evidenced by an increased hemoglobin value, become profoundly asthenic, exhibit dyspnea and finally die. At autopsy, pulmonary congestion was regularly observed and characteristic visceral congestion was usually found while hemorrhagic adrenals and hematuria were irregularly seen.

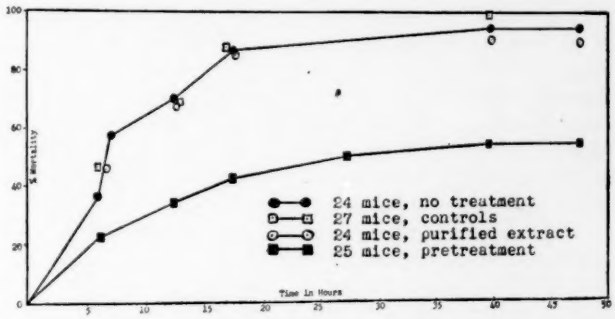
Further details of our findings will be published elsewhere.

RESULTS: EFFECT OF LIVER EXTRACT

Preliminary experiments revealed that three commercial liver extracts, prepared to contain antianemia activity, all appeared to increase significantly the survival time of rats and mice subjected to severe burns. Extensive testing of one of these extracts was then undertaken to establish whether or not this action of liver extract was consistently reproducible and statistically significant. In these experiments, mice were the test animals, liver extract containing 15 injectable U. S. P. antianemia units (henceforth referred to as 15 unit liver) was injected intraperitoneally in a dose of 1 cc. per hundred grams of body weight one-half hour prior to scalding. The control group received an equivalent volume of saline solution under similar conditions. Table 1 shows the composite data of nineteen experiments on a total of 1,131 mice in which it will be seen that liver pretreatment definitely decreases the mortality which follows burns and significantly increases the average survival time. This activity of liver against burn shock is highly consistent, as evidenced by the finding that in nineteen consecutive experiments liver extract showed significant activity in 17 instances, in 1 case questionable activity was observed while in only one experiment was liver extract without effect. The accompanying chart shows a typical time-mortality curve, in which 15 unit liver decreases the rate and degree of mortality following scalding burns.

TABLE 1.—*Effect of Liver Extract Given One-Half Hour Prior to Scalding on Survival Time of Mice*

Treatment	Number of Mice	Number of Mice Survived	Per Cent Difference	Mean Time Survival, Hrs.	Standard Error	Per Cent Difference
Lederle 15 unit liver	573	274	+292	24.8	±1.80	90.6
Saline control.....	558	63	.....	13.0	±1.31	



A representative experiment showing the time mortality curves of four groups of mice after scalding at 65 C. for 10 seconds; black dots, curve obtained with 24 mice which received no treatment, the average survival time being 12.8 hours; white squares, the control group of 27 mice receiving 0.2 cc. of saline solution, average survival time 11.2 hours; white circles, a group of 24 mice receiving 0.2 cc. of a highly purified liver antianemia extract 4-149D, average survival time 12.9 hours; black squares, curve obtained with 25 mice by pretreatment with 15 unit liver extract, average survival time 28.2 hours. It will be seen that 15 unit liver extract decreases the rate and degree of mortality as compared to the control groups but that highly purified antianemia extract 4-149D is without significant effect. This and other findings demonstrate that the antipernicious anemia principle is not the antishock factor.

It was of interest to determine whether or not the activity of liver against burn shock was due to the antianemia activity present in the extract. Highly purified extracts of liver antianemia principle prepared by Dr. Yellapragada Subbarow of the Lederle Laboratories by methods described previously[2] were furnished us. These purified extracts were administered in amounts equivalent to the antianemia activity of the comparatively crude 15 unit liver. The chart shows a representative experiment in which the activity of 15 unit liver is compared to that of a highly purified antianemia liver extract designated as 4-149D. It will be seen that extract 4-149D containing equivalent antianemia activity is inactive while 15 unit liver exhibits its normal activity. It has been found that several other purified extracts of the liver antianemia principle are without significant activity in combating burn shock. These findings clearly indicate that the liver principle effective against shock due to burns is not the antianemia principle.

At the present time, in collaboration with Subbarow and Bohonos of the Lederle Laboratories, we are attempting to isolate the active principle. To date, evidence has been obtained which indicates that the activity is (*a*) relatively thermostable, remaining undiminished after boiling aqueous solutions for twenty minutes, (*b*) not destroyed by aeration at high temperatures, (*c*) soluble in water and precipitated from aqueous solution by acetone or ethanol. It may be mentioned that choline, which is present in liver extracts, has been tested and has been found inactive.

1. Rosenthal, S. M.: Experimental Chemotherapy of Burns and Shock: I. Methods; II. Effects of Local Therapy on Mortality from Shock, Pub. Health Rep. **57:** 1923 (Dec.) 1942.

2. Jacobson, B. M., and Subbarow, Yellapragada: Studies of Principle in Liver Effective in Pernicious Anemia: Recent Advances in Purification of Active Substances, J. A. M. A. **116:** 367 (Feb. 1) 1941.

It is, of course, important to know whether liver extract is therapeutically effective after the onset of shock. We have found that the intraperitoneal injection of 15 unit liver extract has only occasionally shown such activity. This finding seems most likely due to the fact that large amounts of extraneous tissue constituents are present in all types of commercial liver extracts. Large amounts of such impurities are undoubtedly extremely deleterious to shocked animals. Experiments to determine the activity of liver principle administered after shock will therefore be repeated when more purified extracts are obtained. Likewise, questions related to dosage, route of administration and the like have been deferred until complicating constituents accompanying the antishock activity have been removed from the liver extracts.

The mechanism by which liver extract exerts this antishock activity is unknown. From a priori considerations it is possible that liver principle may act either to correct the fluid loss associated with burns, to inhibit the activity of toxic substances believed by some to play a role in the etiology of shock or possibly to correct some other factor, as yet unknown, important for the production of shock. The mechanism of action of liver principle in shock due to burns, as well as the testing of liver in other types of shock, is now the subject of investigation in this and other laboratories.

TABLE 2.—*The Effect of Nine-Tenths per Cent Solution of Sodium Chloride and of the Combined Liver Plus Saline Treatment on the Survival Time of Scalded Rats*

Experiment	Treatment	Dose, Cc. per 100 Gm. Body Weight	Time of Administration, Hours Before Scalding	Number of Rats	Mean Survival Time, Hrs.	Standard Error
1	Saline	5.0	0.5	35	7.0	±1.0
	None	...	...	35	3.2	±0.6
2	Lilly					
	2 unit liver	0.6	18.0	93	15.6	±1.5
	Plus saline	5.0	0.5			
	Saline	5.0	0.5	63	9.0	±1.7
3	Lederle					
	15 unit liver	0.7	18.0	45	18.8	±1.7
	Plus saline	5.0	0.5			
	Saline	5.0	0.5	45	12.6	±1.9

EFFECT OF 0.9 PER CENT SOLUTION OF SODIUM CHLORIDE AND OF LIVER PLUS SALT SOLUTION

We have observed that the intraperitoneal administration of 0.9 per cent solution of sodium chloride given in large amounts (5 or 10 per cent body weight) to mice and rats after scalding significantly decreases mortality. Rosenthal [3] has independently observed this effect and has shown that the sodium ion is the therapeutic agent. He has further shown that sodium salt solutions administered orally are more effective than the same solution injected intravenously. It was of interest to us to determine the effect of prophylactic administration of large volumes of salt solution and to establish whether or not pretreatment with combined liver plus salt solution was superior to salt solution alone. Table 2 illustrates data on this point. It will be seen that the administration of saline solution one-half hour prior to trauma in amounts equivalent to 5 per cent of the body weight significantly increases the survival time but that pretreatment with a combination of liver plus salt solution is superior to that with salt solution alone. Further details will be published elsewhere.

OTHER AGENTS

In view of reports that adrenocortical hormones afford protection against certain types of experimental shock,[4] the activity of desoxycorticosterone acetate and whole adrenal cortex extract against shock due to burns was determined. Neither desoxycorticosterone acetate (2.5 mg. per hundred grams of body weight) given in sesame oil nor adrenal cortex extract (1.0 cc. per hundred grams of body weight) given one-half hour before or following scalding possesses significant antishock activity in rats or mice.

Thiamine hydrochloride, which has been reported to be therapeutically effective in hemorrhagic shock,[5] failed in our hands in doses of 3 mg. per hundred grams of body weight given either before or after scalding to modify the time-mortality curves. Other vitamins such as ascorbic acid, pantothenic acid, nictotinamide and riboflavin given in large doses likewise seemed to be ineffective as regards antishock activity.

The finding that a renal humoral substance, presumably renin, appears in the blood following the induction of experimental shock,[6] has led to the concept that a renal pressor agent is discharged in response to the hypotension accompanying shock, which then tends to restore the blood pressure toward normal levels. These considerations led us to test the effect of nephrectomy on the survival time of animals shocked by scalding burns. On the basis that the renal homeostatic mechanism is important for combating shock, nephrectomized animals should show definitely decreased resistance to burn shock. However, it was found that nephrectomy does not significantly affect the mortality rate. It therefore appears that the renal homeostatic mechanism, although operative, is not of great importance in influencing mortality following burn shock.

Details will be published elsehere.

CONCLUSIONS

1. There is a principle in liver which possesses the activity of combating shock due to burns.

2. This antishock factor present in some commercial liver extracts is not identical with the antianemia principle.

3. Rosenthal, S. M.: Experimental Chemotherapy of Burns and Shock: III. Effects of Systemic Therapy on Early Mortality, Pub. Health Rep. **58**: 513 (March) 1943.

4. Swingle, W. W.; Parkins, W. M.; Taylor, A. R., and Hays, H. W.: The Effect of Priming Doses of Desoxycorticosterone in Preventing Circulatory Failure and Shock in the Adrenalectomized Dog, Am. J. Physiol. **124**: 22 (Oct.) 1938. Swingle, W. W.; Hays, H. W.; Remington, J. W.; Collings, W. D., and Parkins, W. M.: The Effect of Priming Doses of Desoxycorticosterone Acetate in Preventing Circulatory Failure and Shock in the Adrenalectomized Dog, ibid. **132**: 249 (Feb.) 1941. Selye, Hans; Dosne, Christianne; Bassett, Lucy, and Whittaker, Joan: On the Therapeutic Value of Adrenal Cortical Hormones in Traumatic Shock and Related Conditions, Canad. M. A. J. **43**: 1 (July) 1940. Heuer, G. J., and Andrus, W. D.: The Effect of Adrenal Cortical Extract in Controlling Shock Following the Injection of Aqueous Extracts of Closed Intestinal Loops, Ann. Surg. **100**: 734 (Oct.) 1934. Wolfram, J., and Zwemer, R. L.: Cortin Protection Against Anaphylactic Shock in Guinea Pigs, J. Exper. Med. **61**: 9 (Jan.) 1935. Perla, David; Frieman, D. G.; Sandberg, Marta, and Greenberg, S. S.: Prevention of Histamine and Surgical Shock by Cortical Hormone and Saline, Proc. Soc. Exper. Biol. & Med. **43**: 397 (Feb.) 1940.

5. Govier, W. M., and Greer, C. M.: Studies on Shock Induced by Hemorrhage; Effect of Thiamine on Survival Time, J. Pharmacol. & Exper. Therap. **72**: 317 (Aug.) 1941.

6. Sapirstein, L. A.; Ogden, E., and Southard, F. D., Jr.: Renin-like Substance in the Blood After Hemorrhage, Proc. Soc. Exper. Biol. & Med. **48**: 505 (Nov.) 1941. Hamilton, A. S., and Collins, D. A.: Role of the Kidney in the Maintenance of Arterial Blood Pressure in Hemorrhage, Am. J. M. Sc. **202**: 914 (Dec.) 1941; Homeostatic Role of Renal Humoral Mechanism in Hemorrhage and Shock, Am. J. Physiol. **136**: 275 (April) 1942. Braun-Menendez, S.: Personal communication to the authors.

3. It appears that the liver principle effective against burn shock is not readily destroyed by heat or aeration and is precipitated from aqueous solution by acetone and ethanol.

4. Nine-tenths per cent solution of sodium chloride, when administered in amounts equivalent to 5 or 10 per cent of the body weight, is definitely effective against burn shock when given either after or thirty minutes prior to trauma.

5. Pretreatment with liver extract plus large amounts of 0.9 per cent solution of sodium chloride is significantly more effective than salt solution alone.

6. The liver factor described and large volumes of salt solution are the only agents which, in our hands, have been found to be effective in burn shock, adrenocortical hormones, thiamine hydrochloride and other vitamins being without significant action. The renal pressor system likewise does not prolong the survival time of animals subjected to burn shock.

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PRIMARY ATYPICAL PNEUMONIA

A REPORT OF TWO HUNDRED CASES AT FORT EUSTIS, VIRGINIA

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CAPTAIN PAUL S. STRONG
CAPTAIN GEORGE S. GRIER III
AND
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During the past few years there has been recognized, with increasing frequency, an acute respiratory infection associated with peculiar pulmonary lesions.[1] The vast majority of these cases have occurred among young adults, especially at colleges,[2] among hospital staffs [3] and in army camps.[4] Inability to isolate a common pathogenic bacterium has led to the use of the term "virus pneumonia." Numerous designations, including "current bronchopneumonia of unusual and undetermined etiology," "atypical pneumonia with leukopenia," "pneumonitis," "acute influenzal pneumonia," "acute diffuse bronchiolitis" and a variety of other names have been used in reporting similar cases. Actually, none of these terms adequately describe the pathologic picture. It would, we believe, be more nearly correct to call this disease an "acute bronchiolitis with associated atelectasis."

Our purpose in this report is to emphasize the epidemiologic importance of the disease, to consider its clinical features with special reference to the roentgenologic findings and to attempt to clarify the involved pathologic processes, omitting entirely the problem of etiology.

Col. Daniel L. Borden, commanding officer of the Station Hospital, encouraged the writing of this paper; Major Joe M. Blumberg of this hospital and Capt. Victor Tompkins of the Thirty-Third General Hospital made the necropsy report; Dr. W. Edward Chamberlain and Mr. William Taylor of the Temple University School of Medicine made the photographs of the roentgenograms, and Dr. Beryl Paige of the Columbia University School of Medicine and the Babies Hospital made the photomicrographs.

1. Gallagher, J. R.: Bronchopneumonia in Adolescence, Yale J. Biol. & Med. **7:** 23 (Oct.) 1934. Longcope, W. T.: Bronchopneumonia of Unknown Etiology (Variety X): A Report of Thirty-Two Cases with Two Deaths, Bull. Johns Hopkins Hosp. **67:** 268 (July) 1940; Pneumonitis or Virus Pneumonia, Practitioner **148:** 1 (Jan.) 1942. Goodrich, Ben E., and Bradford, H. S.: The Recognition of Virus Type Pneumonia, Am. J. M. Sc. **204:** 163 (Aug.) 1942. Dingle, John H., and Finland, Maxwell: Virus Pneumonias: II. Primary Atypical Pneumonias of Unknown Etiology, New England J. Med. **227:** 378 (Sept 3) 1942. Reimann, Hobart A., and Havens, W. Paul: An Epidemic Disease of the Respiratory Tract, Arch. Int. Med. **65:** 138 (Jan.) 1940. Bowen.[4] Allen.[4] Reimann.[3] Smiley.[2] Kneeland and Smetana.[3] Whiteley, Bernstein and Goldman.[4] Green and Eldridge.[4] Moore, Tannenbaum and Smaha.[4]

(Footnotes continued in next column)

EPIDEMIOLOGY

It is not at all unlikely that atypical pneumonia has existed for many years and has appeared among the cases described as atypical influenza or grip. Many of the cases of pneumonia encountered during World War I in which it was impossible to find the pneumococcus were probably of this type. Reports of this disease have emanated from all parts of the United States, continental Europe and England. Rates of attack have been variable and difficult to evaluate. It does seem certain that the disease tends to occur both endemically and in minor epidemics. While the increased frequency with which x-ray films have been taken during the past year has undoubtedly accounted for the recognition of many of these cases, there has been an actual increase in the incidence of the disease at this post to an extent to which it is now assuming major epidemic proportions (fig. 1). Physicians in neighboring civilian hospitals have also reported a sudden increase of this disease during the past few months.

The effectiveness of a command for training or combat purposes is dependent on the number of men physically fit for duty each day. To indicate the number of men incapacitated because of illness, the term "noneffective rate" was adopted. This term is merely an expression of the number of men sick per thousand strength on the day for which it is calculated. It may also be used to designate the average daily noneffectiveness for a period of more than one day, in which case it denotes the number of men sick per thousand strength during that specified time.

It is clearly seen in table 1 that during the month of September an unusually large number of men (2.2 per thousand strength) were incapacitated for each day of that month because of atypical pneumonia.

The concurrent existence of a large number of infections of the respiratory tract, classified as acute bronchitis, influenza, grip and nasopharyngitis, at a season when such infections are very common did not justify our inclusion of these cases as a mild form of the disease being described. It was recognized, however, that there did exist at this post, during this same interval of time, a moderate number of cases which

TABLE 1.—*Noneffective Rate of Atypical Pneumonia per Month per Thousand Strength at Fort Eustis, Virginia*

May	0.46
June	0.61
July	0.33
August	1.70
September	2.23

2. Smiley, D. F.; Showacre, E. C.; Lee, W. F., and Ferris, H. W.: Acute Interstitial Pneumonitis, J. A. M. A. **112:** 1901 (May 13) 1939.

3. Reimann, Hobart A.: An Acute Infection of the Respiratory Tract with Atypical Pneumonia; A Disease Entity Probably Caused by a Filtrable Virus, J. A. M. A. **111:** 2377 (Dec. 24) 1938. Kneeland, Y. R., and Smetana, H. F.: Current Bronchopneumonia of Unusual Character and Undetermined Etiology, Bull. Johns Hopkins Hosp. **67:** 229 (Oct.) 1940.

4. Bowen, A.: Acute Influenzal Pneumonitis, Am. J. Roentgenol. **34:** 169 (Aug.) 1935. Allen, W. H.: Acute Pneumonitis, Ann. Int. Med. **10:** 441 (Oct.) 1936. Whiteley, J. H.; Bernstein, Abraham, and Goldman, Mervin: Primary Atypical Pneumonia—A Report of Twenty-Five Cases, Mil. Surgeon **91:** 499 (Nov.) 1942. Green, D. M., and Eldridge, F. G.: Primary Atypical Pneumonia, Etiology Unknown, ibid. **91:** 503 (Nov.) 1942. Moore, G. B.; Tannenbaum, A. J., and Smaha, T. G.: Atypical Pneumonia in Army Camp, War Med. **2:** 615 (July) 1942.

clinically were identical with atypical pneumonia except for the lack of definite abnormalities of the chest and x-ray signs. These were considered cases of bronchiolitis, of probably the same etiology but without the associated atelectasis. The lack of adequate facilities for making etiologic studies led us to omit such cases from our series.

The majority of the reports have dealt with outbreaks almost entirely limited to adolescents and young adults. In view of the several minor epidemics at army posts during prewar times, it is not at all surprising that the disease should become prevalent during a period when mass mobilization is in effect.

Most of the larger outbreaks have occurred during the late fall or early winter months, although sporadic cases have appeared at all seasons. Our cases have followed this general pattern with the trend still upward in the month of October (fig. 1).

Very little data were obtained on the incubation period of the disease, but most investigators estimate this period to be about seven to twenty-one days. In 1 of our cases it seemed almost certain that it was fourteen days.

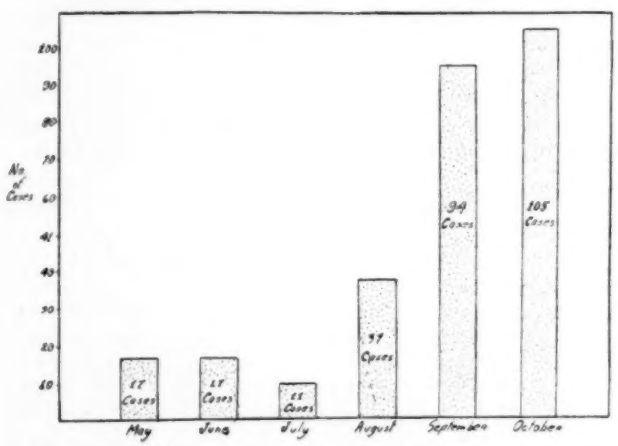

Fig. 1.—Seasonal incidence of atypical pneumonia at Fort Eustis, Virginia.

While atypical pneumonia does not seem to be highly contagious, prolonged contact, such as occurs in barracks, college dormitories and hospitals, results in a high incidence of the disease. Six of our cases occurred among doctors and nurses who had worked in wards in which the disease was prevalent.

CLINICAL OBSERVATIONS

A gradual onset was noted in the majority of patients and was associated with prodromal symptoms of nonproductive cough, low grade fever, muscular aching, malaise, headache and an occasional sore throat. The most common early symptom was a dry cough, which later became productive and often paroxysmal. Substernal soreness, chilly sensations, occasional frank chills and profuse sweats were frequently noted as the infection progressed. Pleuritic pain was uncommon, but substernal soreness on coughing was a common and often distressing symptom. Expiratory grunt and flaring of the alae nasi were absent. With a few exceptions the patients did not demonstrate toxicity, cyanosis or respiratory embarrassment. Soreness of the abdominal muscles due to prolonged coughing was commonly noted. Abdominal pain and tenderness, with occasional nausea and vomiting, were observed in several instances. One patient displayed such definite abdominal signs that an appendectomy was performed even in the presence of physical signs and x-ray evidence of pneumonia.

The physical examination, on admission, usually revealed that the patient was moderately ill, with flushed moist skin, injection of the exposed bulbar conjunctivas, coated tongue and slightly inflamed pharynx. The most significant and frequently the only abnormal initial chest signs were suppressed breath sounds. Fine dry crackling rales were often heard at the end of inspiration, particularly after coughing. A small percentage of the patients who showed no abnormality of the chest on admission developed the typical findings after a period of forty-eight to seventy-two hours. Abdominal examination of those patients complaining of gastrointestinal discomfort frequently revealed some superficial tenderness but was without associated spasm.

The laboratory data were of value in differentiating this disease from the bacterial pneumonias. The majority of the white blood cell counts were normal. A definite leukopenia was rare. There was a tendency for the neutrophilic percentages to be slightly increased, values in the region of 75 to 85 per cent not being infrequent. No predominating pathogenic organisms were found in the sputum except in 3 instances, and these were all pneumococci of higher types which were considered to be without causative significance. A transient albuminuria was noted in those with very high fevers. All blood cultures were sterile.

TABLE 2.—*Statistical Data*

	Percentage of Cases
Gradual onset (more than 24 hours)	63
Productive cough	51
Substernal soreness	44
Sore throat	26
Muscular aching	25
Dyspnea	3
Cyanosis	3
Blood tinged sputum	6
White blood cells (5,000-10,000)	75
Polymorphonuclear differential (60 to 80)	90
Termination of fever by lysis	91
Respirations less than 24 per minute	85
Pulse less than 110	85
Accompanying fever of 6 days or less	75
Admission temperature between 100 and 103 F.	80
Hospitalized 16 days or less	60

TABLE 3.—*Differential Criteria in Pneumococcic and Atypical Pneumonias*

	Pneumococcic	Atypical
Onset	Abrupt	Slow
Cyanosis and dyspnea	Frequent	Rare
Herpes	Frequent	Rare
Pulse rate	Rapid	Normal or only slightly accelerated
Respiratory rate	Accelerated	Normal
Physical signs	Impaired resonance; bronchial breathing	Very slight change in resonance; rare bronchial breathing; frequent rales
Sputum, gross	Rusty	Greenish mucoid
Sputum, microscopic and culture	Pneumococci	No predominating organism or occasional higher type of pneumococcus
White blood cell count / Polymorphonuclear count	Both high	Normal white blood cell count; slightly elevated polymorphonuclear count
X-ray appearance	Dense consolidation	Stringy and mottled type densities
Crisis	Frequent	Rare
Severity	Severe	Mild
Response to sulfonamides	Good	None

COURSE

In the presented series only 6 patients were considered to be seriously ill, 1 of whom died. The patients rarely looked as sick as their temperatures would indicate. The temperatures on admission ranged from normal to 105 F., averaging 102 F., and fluctuated widely over twenty-four hour periods. The maximum fever was frequently reached within thirty-six hours after admission and terminated by lysis in about five days, regardless of the form of therapy. A few patients continued to have fever for as long as twelve to eighteen days. Pulse and respirations were not accelerated in proportion to the fever.

As the patients improved, the muscular aching, sweats, headache, sore throat and malaise disappeared, while the cough became more productive and frequently lasted several days after the temperature reached normal. Spread of the disease process from one lobe to another or from one lung to the other was noted occasionally. Complications were rare, but slight pleural effusion was noted in a few cases. One patient developed a rapidly spreading myelitis which proved to be fatal.

TABLE 4.—*Statistical Summary of Radiographic Findings*

Condition	Cases	Per Cent
1. Basilar involvement	162	81
2. Bilateral involvement	44	22
3. Right sided involvement	78	39
4. Left sided involvement	78	39
5. Upper lobe involvement only	23	11
6. Right upper lobe involvement only	22	10.5
7. Left upper lobe involvement only	1	0.5
8. Involvement of left upper and lower lobes only	10	5
9. Involvement of right upper and lower lobes only	4	2
10. Involvement of all lobes	1	0.5
11. Involvement of both lower lobes and right upper	4	2
12. Involvement of upper lobe irrespective of other lobe	36	18
13. Involvement of right lower and left upper lobe	3	1.5
14. Presence of pleural fluid (very slight in every instance)	12	6
15. Elevation of diaphragm or shift of mediastinum or both	38	19
16. Spread of lung disease after initial film study	12	6
17. Average number of days for film clearing	11.5 days	
18. Case negative on admission and developed densities later	1	0.5

The average period of hospitalization was twelve days, but this high figure is partially due to the necessity of keeping these patients in the hospital until they are ready to assume full military duty.

THERAPY

It has been shown conclusively that sulfathiazole and sulfanilamide did not alter the course of the disease in any way. In this series the average duration of fever for all 200 cases was 5.1 days, whereas in the 98 cases in which a sulfonamide compound was given the fever lasted 5.8 days and in the 102 cases in which symptomatic treatment was given the average duration of the fever was 4.4 days. Routine therapy was supportive in nature and included bed rest, adequate fluids, antipyretics and sedatives. A persistent cough often responded favorably to steam inhalations and expectorants. The oxygen tent was of value for those patients who were cyanotic or dyspneic.

ROENTGENOLOGIC ASPECTS

An analysis of the roentgenograms in this series of 200 cases of atypical pneumonia demonstrated that 81 per cent of the pulmonary lesions were basilar, that 39 per cent were located on the right side while a similar percentage was seen on the left and that 11 per cent of the cases showed involvement of the right upper lobe and in 5 instances were misdiagnosed as pulmonary tuberculosis (fig. 3). Differentiation between pulmonary tuberculosis and atypical pneumonia could be made only by repeated progress film studies and sputum examinations. In 1 of Kneeland and Smetana's cases,[3] pneumothorax had been instituted before the true nature of the lesion in the upper lobe was appreciated.

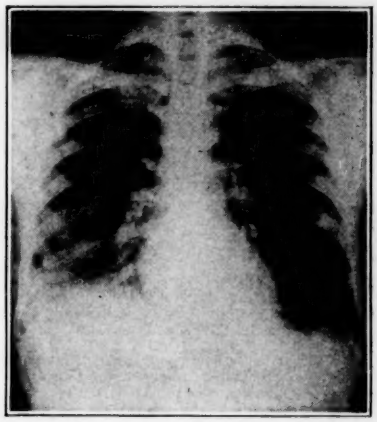

Fig. 2 (case 1).—Basilar stringy and mottled density seen in 81 per cent of our cases. The radiating stringy densities represent diseased bronchi and bronchioles. The hazy mottled density represents atelectatic lung. Note the platelike areas of atelectasis with associated elevation of the right leaf of the diaphragm.

Although in all our cases initial roentgenograms were made, in only 100 were adequate progress film studies done. Of these 100 cases it was found that 57 per cent had cleared radiographically at the end of ten days, 85 per cent in twenty days and the remaining 15 per cent in the ensuing twenty day period.

Since 81 per cent of these cases demonstrated basilar disease, detailed description will be confined to this type of involvement (fig. 3). Careful examination of the basilar shadows revealed a streaking type of density which radiated downward from the lung root and extended outward over the leaf of the diaphragm. These shadows conformed to the general distribution of the bronchi. Superimposed on the stringy density was a mottled type of shadow which occurred in any part of the chest but was most commonly seen at the right cardiophrenic angle at or below the lung roots or along the left border of the heart. Kornblum and Reimann,[5] in reference to a similar epidemic, described these streaking densities radiating from the lung roots and used this finding as an x-ray criterion for diagnosis of tracheobronchitis. The underlying disorder in our 200 patients was in accord with this interpretation, but all roentgenograms demonstrated superimposed mottled densities. The mottled densities were interpreted as a lobular form of atelectasis based on a definite mechanical factor—the complete block of the smaller bronchi and bronchioles by collected exudate and swollen epithelium. It was thought that the stringy type of densities represented a combination of

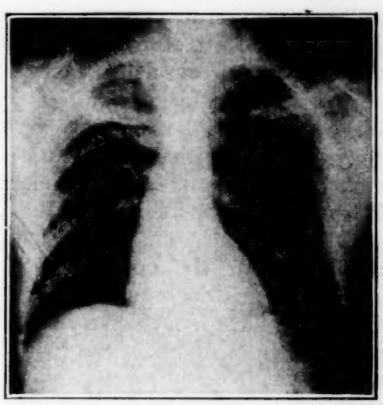

Fig. 3.—Patchy atelectasis of the right upper lobe, resembling pulmonary tuberculosis.

5. Kornblum, Karl, and Reimann, Hobart A.: The Roentgenological Aspects of an Epidemic of Acute Respiratory Tract Infection, Am. J. Roentgenol. **44**: 333 (Sept.) 1940.

exudation within bronchi and bronchioles, swollen bronchial and bronchiolar epithelial lining, and peribronchial and peribronchiolar cellular infiltration (fig. 7). The majority of the soldiers in question were ambulatory during the days prior to their initial x-ray examination and because of the dependent drainage of

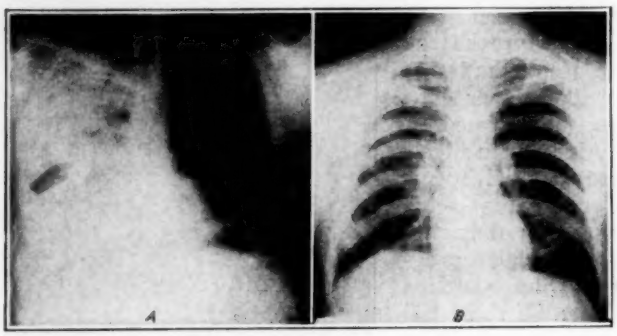

Fig. 4.—*A*, the homogeneous density in the right upper lobe has the appearance of a lobar pneumonia. However, the decided right sided shift of the trachea and heart with elevation of the diaphragm reveals its true atelectatic nature. *B*, same case seventeen days later demonstrates complete reaeration of the right lung. The mediastinal structures and the right leaf of the diaphragm have assumed their normal positions.

exudate the basilar portions of the lung fields would be the part most frequently involved. This conception was verified by the fact that 81 per cent of these cases demonstrated basilar pulmonary disease. Snow and Cassasa [6] in their reviews of bronchiolitis in children and influenza in adults stressed the importance of dependent drainage of exudate in the mechanism of basilar atelectasis.

The fact that 19 per cent of these cases showed a shift of the mediastinal structures, or an elevation of the diaphragm toward the site of lung involvement, gave further substantiation to the diagnosis of atelectasis (fig. 4). On rare occasions a complete lobe became atelectatic (fig. 4), and in these roentgenograms the shift of the mediastinum and the elevation of the diaphragm was pronounced. The collapsed lobe often simulated lobar pneumonia, but the diminished volume of the involved lobe, narrowing of the rib interspaces, shift of the mediastinum and elevation of the diaphragm revealed its true atelectatic nature.

A distinctive feature of this disease was the variability of the pulmonary involvement. In many cases the mottled densities were seen to appear and disappear over night. The intermittent obstruction of the smaller bronchi and bronchioles was thought to be responsible for the transient pulmonary changes, and this may have accounted for the negative x-ray appearances when physical signs were present beforehand. Snow and Cassasa [7] have conclusively shown that bronchiolitis in children will give the pathologic appearance of atelectasis and emphysema, with the latter being the prominent radiographic finding. In children, air is allowed to enter the alveolus through the diseased bronchiole but is not permitted to escape. In effect, the involved bronchiole acts as a ball valve which holds the alveolus in a state of constant inflation. In contrast, the adult cases of bronchiolitis, such as those being described, demonstrated complete bronchial block with associated absorption of alveolar air.

One striking feature that was quite apparent in the majority of cases was the presence of horizontal linear densities overlying either diaphragm (fig. 5). This finding was usually discovered after considerable clearing of the basilar shadows. These band densities had the appearance of the platelike atelectasis described by Fleischer and his associates,[8] who proved conclusively, by correlation of postmortem teleoroentgenograms with gross and microscopic studies, that the band shaped horizontal basilar densities represented atelectatic lung.

It is remarkable to note that in only 6 per cent of these patients radiographic evidence of pleural fluid developed, and in these instances the amount of fluid was insignificant (slight obliteration of either costophrenic angle).

On review of the case illustrated in figure 6 it is noted that the density in the right lower lobe had not changed in a period of forty-six days. A bronchogram made with iodized oil at the end of that time not only revealed atelectasis but also demonstrated localized fusiform bronchiectasis. It is universally agreed that unrelieved atelectasis, as well as an acute bronchiolitis, may cause bronchiectasis. With these facts in mind, one can readily see that bronchiectasis could be a serious complication in the 15 per cent of chests which failed to clear after twenty days of hospitalization. (This phase of the problem, we believe, would warrant further investigation.)

An unusual complication encountered in 6 cases was the presence of multiple rib fractures, apparently the result of prolonged severe coughing. These fractures were usually overlooked in the initial roentgenograms but became apparent on subsequent studies, which demonstrated callus formation.

A TYPICAL CASE

CASE 1.—G. H. L., a white soldier aged 21, was well until September 24, when a nonproductive cough developed. Two days later he began to have fever and generalized muscular aching, which continued until his admission on September 28.

The principal physical findings on admission consisted of slight inflammation of the pharynx, moderate enlargement of the right tonsil, decreased breath sounds at the base of the right lung posteriorly and a few rales over the same area. The admission temperature and the pulse and respiratory rates were 103.2 F., 112 and 28 respectively.

The white blood cell count was 6,500 with 70 per cent polymorphonuclears. A roentgenogram of the chest taken on September 28 revealed both mottled and stringy densities at the base of the right lung and elevation of the diaphragm on that side (fig. 2).

Fig. 5.—Complete collapse of the right upper lobe is noted with platelike areas of atelectasis overlying each leaf of the diaphragm. The mediastinal structures have been pulled to the right side.

General supportive measures were instituted on admission. In addition, sulfathiazole was given for the first three days but, conforming with our experience, no beneficial effect was noted. The course of the disease was uncomplicated. Physical

6. Snow, William, and Cassasa, C. S. B.: Obstructive Emphysema and Atelectasis in Influenza, J. A. M. A. **109**: 1886 (Dec. 4) 1937; footnote 7.

7. Snow, William, and Cassasa, C. S. B.: Obstructive Emphysema and Atelectasis in Acute Respiratory Disease in Infants, Am. J. Roentgenol. **37**: 217 (Feb.) 1937.

8. Fleischer, Felix; Hampton, Aubrey O., and Castleman, Benjamin: Linear Shadows in the Lung, Am. J. Roentgenol. **46**: 610 (Nov.) 1941

signs in the chest persisted up until the eighteenth day of hospitalization. The patient was discharged to full duty on the nineteenth hospital day.

REPORT OF THE FATAL CASE

CASE 2.—R. W. S., a soldier aged 24, was admitted to the medical service of the Station Hospital, Fort Eustis, Virginia, on Sept. 15, 1942. His chief complaints were those of cough, pain in the chest and fever of two days' duration. The temperature was 102 F., the pulse rate was 112 and the respiratory rate was 22. The patient did not appear acutely or seriously ill. A few moist rales were noted over the middle lobe of the right lung. The remainder of the physical examination was negative.

The white blood cell count was 6,750 per cubic millimeter, with 80 per cent polymorphonuclear leukocytes. The urine was normal. Smears and culture of the sputum showed no pneumococci. A roentgenogram, taken September 16, showed a diffuse area of density spread throughout the right lung field, most pronounced along the lower portion of the right upper lobe. Another film taken on September 23 revealed considerable spread of the process in the right lung with some involvement of the left lung. A blood culture was sterile after seventy-two hours' incubation.

For the first four days in the hospital the patient received symptomatic treatment. His temperature during this period varied from 99 to 104 F., although at no time did he seem seriously ill. On September 19 his temperature rose to 105 F. and he was started on sulfathiazole medication with an initial dose of 2 Gm., followed by 2 Gm. in two hours and then 1 Gm. every four hours. There was little response to the drug as far as the febrile course was concerned, although the patient seemed clinically improved.

On September 22, the seventh day in the hospital, the patient seemed more acutely ill and began to complain of transient pains and numbness in his feet. Physical examination, which included a careful neurologic examination, failed to reveal anything to account for these changes. The following morning the patient was unable to move his legs. Examination at that time revealed a flaccid paralysis of the lower extremities, with loss of sensation extending up as high as the second thoracic vertebra. There was slight nuchal rigidity, but the Kernig and Brudzinski signs were negative. No other pathologic reflexes were noted. His subsequent clinical course was characterized by rapid progression of the paralysis, which reached the upper extremities and diaphragm twelve hours after its onset. Lucid periods alternated with periods of considerable confusion. Lumbar puncture revealed cloudy fluid under increased pressure with 2,000 cells, 90 per cent of which were polymorphonuclears, increased protein, a normal sugar and a negative smear and culture. Associated with the rapid spread of the paralysis, the temperature rose progressively, and, with the approach of 108 F., respirations ceased.

POSTMORTEM EXAMINATION

Gross.—The body was well developed but rather thin, measuring 69 inches (175 cm.) and weighing about 65 Kg. There was a linear scratch over the right aspect of the right side of the abdomen measuring 12 cm. in length and a skin puncture in the midlumbar region. The chest was symmetrical. There was no peripheral lymphadenopathy.

The head was ovoid; hair on the head was abundant; dentition was good; there was a small amount of mucoid fluid in the mouth; hazel irises were surrounded by round, regular pupils, each 0.6 cm. in diameter.

The peritoneal cavity contained no excess free fluid. The heart appeared slightly dilated. The epicardial fat was abundant. The maximal transverse diameter in situ was 16 cm. The thymus measured 3 by 4 cm.

The pleural cavity contained about 200 cc. of bloody fluid; the lungs filled the available space.

The heart weighed 450 Gm. and had a small amount of adherent fat. The auricles appeared normal, measuring 2 to 3 mm. in thickness. The circumferential measurement of the tricuspid valve was 11.5 cm. The pulmonary valve measured 8.25 cm. and was normal otherwise. The right ventricle measured 6 mm. in thickness; the left auricle measured 1 mm. and was normal. The mitral valve in circumferential measurement was 9.5 cm. The leaflets contained no vegetations. The right ventricle had an average thickness of 12 mm.; the muscles were normal; the aorta contained a few early formed atheromatous plaques, some of which appeared to encroach around the coronary openings.

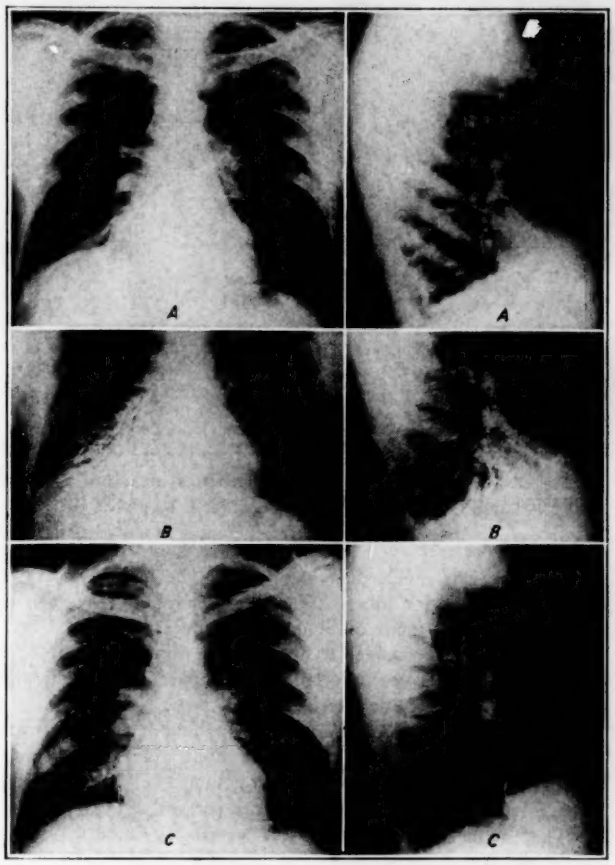

Fig. 6.—*A*, initial film study done on July 5, 1942, demonstrates a dense horizontal band of atelectasis overlying the right leaf of the diaphragm. *B*, studies made with iodized oil on August 20, after the right lower lung field failed to reaerate, demonstrates the crowded lower and middle lobe bronchi typical of atelectasis. Note the bronchiectasis. *C*, reaeration is shown on a progress study done on September 11. Note the iodized oil remaining in one of the bronchiectatic bronchi of the right lower lobe.

The right lung weighed 1,130 Gm. The pleura was smooth, shiny and translucent. The pleural surface displayed a quilted effect; small (1 to 3 cm. in diameter) pink aerated crepitant segments of tissue were slightly elevated above dark red rubbery tissue. On section the major portion of all lobes presented a bloody surface which was fairly dry when scraped. There was no spontaneous fluid or foam flow. On pressure some pink thin foam welled from minor bronchi. The cut surface varied considerably in color. Salmon pink alternated with dark red in scattered fashion, the foci of each being poorly demarcated. Near the hilar portion most of the lung was dark red. The pink tissue was crepitant and visibly aerated. The dark tissue was noncrepitant but soft and spongy. Finger pressure produced a pit here. The absence of fracturability and of firmness was remarkable in the consolidated portions. A very few firm nodular foci were palpated. These did not account for the extensive lack of aeration. The bronchial mucosa was reddened, velvety and thickened. The bronchial tree contained thin bloody fluid. The pulmonary veins and arteries were patent throughout. The lymph nodes of the bronchial and

pretracheal group were enlarged, moderately firm and dark brownish red on section.

The left lung weighed 660 Gm. The pleural surface presented a number of confluent superficial hemorrhages. The lower lobe was completely subcrepitant but remained elastic. It was reduced in volume. The upper lobe near the margin

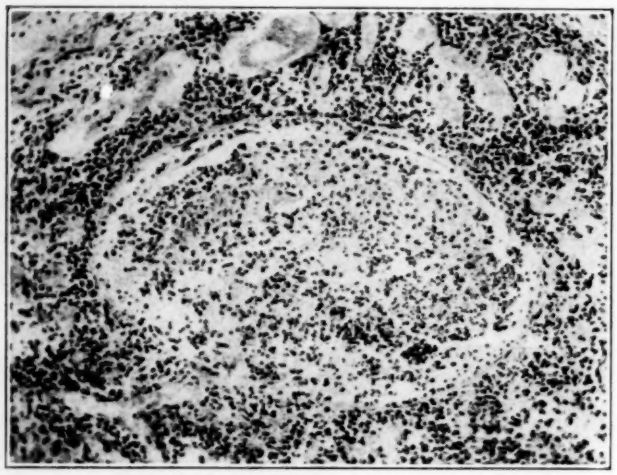

Fig. 7.—Severe bronchitis with peribronchial infiltration. Note the intrabronchial cellular exudate.

of the lappet contained air and was crepitant. On section the upper lobe was dull red and uniform. The lappet was salmon pink. The inferior lobe, besides the general doughy feel, presented a central focus of ill defined firmness roughly 2 cm. in diameter. The bronchial tree contained thin bloody fluid; the bronchial walls were injected. The upper lobe, particularly the anterior lappet, was well aerated.

The liver weighed 1,950 Gm. Throughout it showed a rather normal architecture and contained slight yellow focal areas; otherwise it appeared normal throughout; it was moderately congested. A small Riedel lobe was present.

The gallbladder contained dark green bile fluid. On pressure bile was expressed through the ampulla of Vater.

The spleen weighed 240 Gm. and was purplish red and soft. On section it was mottled, fibrous and a mottled reddish brown. It appeared moderately congested; otherwise it was normal.

The right adrenal weighed 11 Gm.; the left adrenal 8 Gm.

The right kidney weighed 300 Gm., was reddish purple and appeared normal. The capsule stripped with ease. The left kidney weighed 300 Gm. and appeared similar to the right kidney.

There were small punctate petechial hemorrhages on the stomach.

The pancreas weighed 135 Gm. and appeared fibrous in structure.

The bladder contained about 20 cc. of cloudy straw colored fluid. The ureteral orifices were patent and the trigone appeared normal.

The brain weighed 1,620 Gm. The brain grossly showed a rather definite generalized hyperemia and what appeared to be edema of the piamatral areas. The sphenoid sinuses were free of pus.

The entire spinal cord showed a moderate degree of hyperemia. The lumbosacral region was moderately yellow, appearing with small attached plaques adhering to the arachnoid-pia area.

Microscopic.—The important changes in the lungs were those of bronchitis and peribronchitis, interstitial pneumonitis and atelectasis. The entire process was unusual.

The major bronchi showed sloughing of the epithelium. The mucosa was moderately edematous and diffusely infiltrated with lymphocytes, occasional plasma cells and a moderate number of well preserved neutrophils. The vessels were engorged. The mucus glands appeared normal. In the smaller bronchi there was a similar process with the lumen partly occupied by exudate, but there were conspicuous peribronchial accumulations of lymphocytes and plasma cells. These accumulations in some sites presented the picture of hypertrophied peribronchial lymphoid apparatus; in other sites, however, they were more typically inflammatory. Not all bronchi were involved, as could be seen in the aerated anterior margin of the left upper lobe. Nor was the process uniform as regards the extent of mucosal and peribronchial changes. For instance, in the left upper lobe one section showed peribronchial change with relatively little mucosal inflammation. The contents of the bronchial tree were usually purulent with very little mucus mixed with it. Sections from the right lower lobe showed a general decrease in the size of the alveoli. This process occurred either associated with thickening of the alveolar wall or in its absence. The alveoli which had thickened walls contained rafts of mononuclear cells, some in epithelium-like alinement. Some of these cells had phagocytic properties, having engulfed nuclear remains or blood pigment. The thickening of alveolar walls was accompanied by edema and a variable amount of lymphocyte and plasma cell accumulation (figs. 7, 8 and 9).

There were a few changes in isolated foci in which organizing fibrinopurulent plugs occupied alveolar spaces and a few sites of intra-alveolar fluid and granulocytes indicating bronchopneumonia, old and recent. This was a minor feature. A single focus of necrosis was visible in the lung parenchyma at a place where bronchopneumonia as well as interstitial pneumonitis was present. There was no visible vascular lesion to account for this, however. The intersinusoidal cords of the spleen contained an increased number of cells, among which were many granulocytes. There was some vacuolization of the centrolobular liver cells, slightly decreased cortical lipid of the adrenals and slight parenchymatous degeneration of the tubules of the kidneys.

Section through a temporal horn of the cerebrum including the hippocampus showed a small focus of perivascular edema and granulocyte infiltration. The ganglion cells appeared well preserved. This suggested that the inflammatory process was very recent here.

Section of the basal ganglions showed an outer portion of the lentiform nucleus (putamen), caudate nucleus, claustrum and

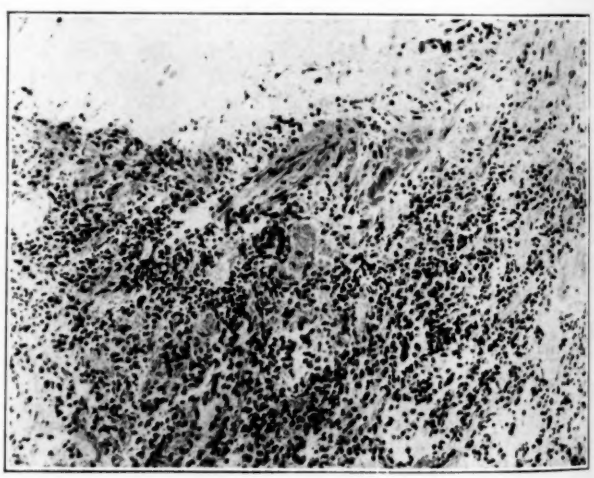

Fig. 8.—Alveolar collapse with interstitial round cell infiltration.

cortes of the insula and demonstrated only slight pial edema with a rare lymphocyte and neutrophil in the pia both on the cortical surface and in the reflections along the major vessels.

Section of the cerebellum showing cerebellar folia and emboliform and dentate nuclei revealed no parenchymal change. The meninges were edematous and contained a few granulocytes, lymphocytes and plasma cells.

Section of the hypothalamus, which contained a portion of pituitary stalk, demonstrated no noteworthy changes other than a moderate number of lymphocytes about some of the larger vessels.

Sections of the cord from the cervical and lumbar regions may be described together. The changes were minimal, consisting of pial edema with slight infiltration with lymphocytes and neutrophils. Levels of the eighth and tenth thoracic vertebrae presented an entirely different picture. Here there was extensive perivascular necrosis, edema and neutrophil infiltration with deposition of fibrin. Some vessels were occluded by fibrin thrombi. The process was so extensive as fairly to constitute small abscesses. The change involved white as well as gray matter and could be traced in 1 instance to a peripheral nerve root where the necrosis occurred also about the central vessel. There was some meningitis characterized by accumulation of neutrophils. There was no doubt, however, that this was secondary to the changes within the cord.

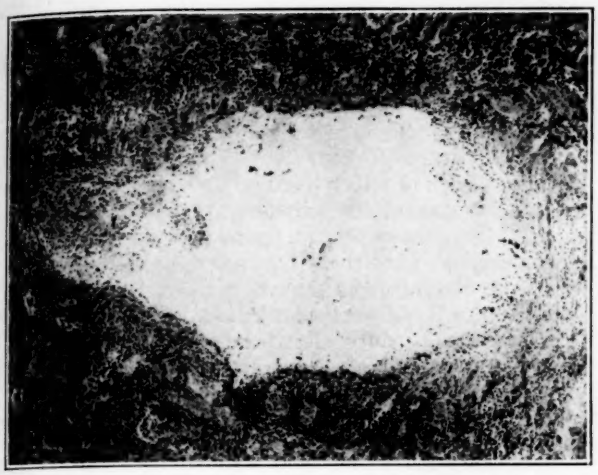

Fig. 9.—Extensive interstitial round cell infiltration and well defined atelectasis as seen under low power.

PATHOLOGIC DIAGNOSIS

1. Bronchitis, bronchiolitis, peribronchitis and peribronchiolitis.
2. Interstitial pneumonitis, etiology unknown.
3. Atelectasis, secondary to bronchiolitis and peribronchiolitis.
4. Bronchopneumonia, old and recent.
5. Encephalitis, focal, acute, secondary to foregoing.
6. Purulent myelitis involving lower thoracic segments, etiology unknown.
7. Meningitis, acute, slight, secondary to foregoing.

COMMENT

A disease which, because of its prolonged period of hospitalization, gives rise to a great loss of man days becomes of tremendous military importance when it is prevalent. The rapidly mounting incidence of atypical pneumonia at this post led to the preparation of this brief review of 200 unselected cases. The symptoms and physical signs have been dealt with hurriedly because this phase of the disease has been well described in the current literature. Special emphasis has been given to the physiopathologic changes of atypical pneumonia, roentgenography, studies with iodized oil and the one postmortem examination being used as aids. No final conclusions can be drawn from a single case. Deaths from this disease are rare. The fatal case presented all the clinical features that were noted in the other cases in this series as well as similar radiographic changes. The studies with iodized oil and the microscopic anatomy of the lungs served to confirm the roentgenologic belief that atelectasis rather than true pneumonia was the underlying pathologic condition and accounted for the mottled type of density seen in the x-ray film. The primary process was believed to be a peribronchitis, peribronchiolitis, bronchitis and bronchiolitis, with swelling of the bronchial epithelium and exudation into the bronchi and bronchioles with resultant occlusion and absorption of air.

The similarity between the lesions of atypical pneumonia and those of pulmonary tuberculosis has led in some instances to incorrect diagnoses which have brought about unfortunate results. Not only have artificial pneumothoraces been induced, but patients have been discharged from the Army with the erroneous diagnosis of pulmonary tuberculosis. At a time when the need for manpower is so critical, errors such as this are to be strictly avoided. Serial roentgenograms and repeated examination of sputum are indicated in cases in which there is doubt concerning the diagnosis.

The differentiation from bacterial pneumonia, whether of lobar or of lobular type, should in the majority of instances cause no difficulty. Among the severely ill patients this trouble may be encountered, as it was on 2 occasions in our series. It is a good policy to give the sulfonamides when there is doubt.

While spread of the disease process from one lobe to another or from one lung to the other was noted occasionally, there were no true relapses. As far as it was possible to ascertain there were no readmissions of any of these patients with a second attack of the disease, although our observations were limited by the relatively short training period.

SUMMARY

1. A study of 200 unselected cases of atypical pneumonia occurring during an epidemic of this disease at Fort Eustis, Virginia, was made.

2. The disease is a self-limited type of pulmonary infection, with mild and infrequent complications.

3. The epidemiologic aspects of the disease and its high noneffective rate are important to the military service.

4. The pathologic condition underlying the bizarre roentgenographic changes is that of bronchitis, bronchiolitis, peribronchitis and peribronchiolitis with associated atelectasis caused by mechanical obstruction of the bronchi and bronchioles and does not represent a true pneumonia.

5. Eleven per cent of cases present apical lesions which may be confused with pulmonary tuberculosis unless progress film studies are made.

6. Treatment with sulfathiazole and sulfanilamide is without effect on the clinical course of the disease.

7. A fatal case with complication of the central nervous system was examined post mortem.

No Mechanism to Oxidize Urate.—Man and the ape are unique in the precise steps of purine metabolism and occupy an intermediary position between reptiles and certain mammals in so far as the metabolism of nitrogenous products is concerned. The amino-nitrogen and pyrimidin-nitrogen waste is excreted as urea, while the purine nitrogen is excreted as urate because no enzyme is present to oxidize urate to allantoin. If man were endowed with a mechanism which enabled him to oxidize urate, gout would not be possible, or else it would manifest itself as a different clinical and chemical disturbance.—Talbot, John H.: Gout, New York, Oxford University Press, 1943.

SULFADIAZINE PROPHYLAXIS IN AN EPIDEMIC OF SCARLET FEVER

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Infectious diseases often appear in epidemic proportions under wartime conditions when it becomes necessary to gather large bodies of troops into crowded quarters. Such conditions are particularly favorable to the spread of the air borne infectious diseases of the respiratory tract. While experimental work with aerosols apparently offers promising prospects for controlling droplet infections, effective technics have not as yet been perfected for employing these substances on a large scale. Several recent reports [1] have appeared, on the other hand, showing that small doses of sulfanilamide, given over prolonged periods, will prevent rheumatic subjects from having hemolytic streptococcus infections of the respiratory tract and thereby save them from recurrences of rheumatic fever. In addition, reports have appeared indicating that the sulfonamide compounds have been used effectively to protect scarlet fever contacts [2] and prevent meningococcic,[3] gonococcic and chancroidal infections.[4] It therefore seemed probable that the sulfonamide compounds might be similarly used to control epidemics of hemolytic streptococcus infections among normal men. This communication is a report on the use of sulfadiazine in controlling an outbreak of scarlet fever at a United States naval station.

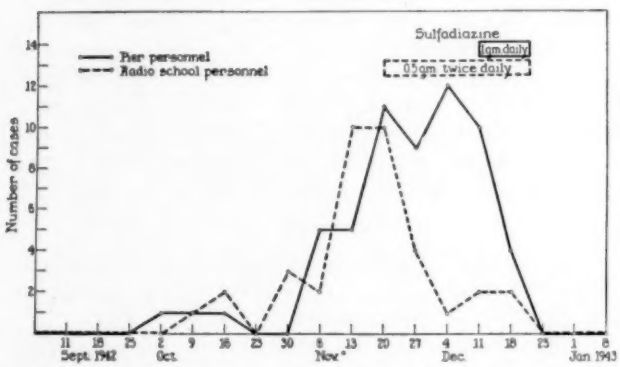

Chart 1.—Weekly case rate of scarlet fever in the radio school and pier personnel before and after administration of sulfadiazine.

EPIDEMIOLOGIC SITUATION

The personnel at this station was housed on a large pier and during the period of investigation numbered several thousand. It was divided into two groups: (1) students in a radio school and (2) transients. The former slept and messed on the pier but spent their days in classes held in a building a few blocks away. The radio school students were further divided into four classes, each of which lived on the pier four months; a new class started its schooling the middle of each month. The transient group, termed the pier personnel, was about four times the size that of the radio school. These men, coming from many places, remained at this station from a few hours to several weeks while awaiting assignment to duty elsewhere. The weekly turnover among this group was approximately equal to two thirds of the capacity of the pier. The two groups were lodged together under the same roof, slept in double decker beds and messed in the same hall.

METHODS OF STUDY

All patients with scarlet fever or suspected scarlet fever were admitted either to the U. S. Naval Hospital, Brooklyn, or to the Hospital of the Rockefeller Institute for medical care. Only unquestionable cases of scarlet fever are considered in this paper. Nose and throat cultures were taken on all patients admitted to the Hospital of the Rockefeller Institute, and through the courtesy of Lieut. Comdr. A. F. Coburn throat cultures were obtained from most of the patients admitted to the Brooklyn institution. All were submitted to similar bacteriologic analysis at the Hospital of the Rockefeller Institute.

Throat culture surveys were also made at intervals during the study to determine the carrier rate for hemolytic streptococci at the station. In making these cultures, particular care was taken to swab both tonsillar areas and the posterior pharyngeal wall. The swabs were then immediately wiped on fresh 5 per cent sheep blood agar plates. These plates were brought to the laboratory, streaked properly and incubated aerobically for twenty-four to thirty hours at 37 C. Representatives of all suspected colonies were transferred to fresh blood agar plates or to broth for further identification. The hemolytic streptococci were grouped and typed by the precipitin methods described by Lancefield.[5]

Determinations of blood sulfadiazine concentrations were made with fresh oxalated samples of venous blood according to the method of Bratton and Marshall.[6]

From the United States Navy Research Unit at the Hospital of the Rockefeller Institute for Medical Research and the Hospital of the Rockefeller Institute for Medical Research.

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth in this article are those of the writers and are not to be considered as reflecting the policies of the Navy Department.

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DESCRIPTION OF EPIDEMIC AND RESULTS OF STUDIES

The first case of scarlet fever to appear at this station in the fall of 1942 occurred on September 28. During October only a few additional cases were reported; the number were about equally distributed between the radio school and the pier personnel. During the first two weeks in November, however, the incidence of scarlet fever increased sharply in both groups, as indicated in chart 1. By November 20 the number of cases in the radio school had reached a level of 10 a week, with a slightly higher incidence among the pier personnel.

The hemolytic streptococci from all of the patients admitted to the hospital in the early part of November were identified as group A type 19. With a single type causing all the cases, it was apparent that the existing conditions were favorable for developing and perpetuating an epidemic. It soon became evident also that the incidence of scarlet fever in the radio school, which consisted of the more permanent population, was proportionately higher than that among the pier personnel. With these facts in mind it seemed possible that if the disease could be controlled in the radio school the incidence among the pier personnel might also decrease, since this population was mostly transient.

On November 20, therefore, as a prophylactic measure, the entire personnel of the radio school was started on 0.5 Gm. of sulfadiazine twice a day. The drug was given at 8 a. m. and 4 p. m. and was continued for a period of thirty-two days, through December 22. The results were striking (chart 1). During the first week after sulfadiazine was started the incidence dropped to 4 cases a week, and during the next three weeks only 5 new cases of scarlet fever appeared among this group.

For three weeks after sulfadiazine was begun in the radio school, the incidence of scarlet fever among the pier personnel, on the other hand, remained high. For this reason the pier personnel was started, December 11, on prophylactic doses of sulfadiazine 1 Gm. daily, given at 8 o'clock each morning, because it was not possible to divide the daily dose as was being done at the radio school. The drug was continued for 12 days through December 22; during the first seven days the population at the station was stabilized as far as conditions would permit. The effects, as shown in chart 1, were even more striking than had been observed in the radio school.

A total of 95 cases of scarlet fever occurred at this station between September 28 and December 18. Satisfactory throat cultures were obtained from 72 patients, of which 71 were positive for hemolytic streptococci group A type 19 and 1 for type 5. From December 18 through January 8, the end of the period of observation, no new cases of scarlet fever appeared, although sulfadiazine was discontinued in both groups on December 22.

TABLE 1.—*Throat Culture Surveys of the Radio School and Pier Personnel*

	Radio School Personnel						Pier Personnel			
Sulfadiazine prophylaxis *	Before		During		During		Before		After	
Date of survey	11/17/42		12/3/42		12/18/42		12/9/42		12/23/42	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Number cultured	203		205		201		203		204	
Gross carrier rate	52	25.6	32	15.6	40	19.9	44	21.7	35	17.2
Group carrier rate										
Group A	40	19.7	25	12.2	21	10.5	18	8.9	15	7.4
Group B	0	0	0	0	1	0.5	4	2.0	1	0.5
Group C	5	2.5	3	1.5	5	2.5	6	2.9	9	4.4
Group F	0	0	0	0	6	2.9	3	1.5	4	2.0
Group G	7	3.4	4	1.9	7	3.5	13	6.4	6	2.9
Group A carrier rate by type										
Type 1	0	0	0	0	0	0	3	1.5	0	0
Type 5	1	0.5	0	0	0	0	1	0.5	0	0
Type 6	13	6.4	8	3.9	4	2.0	2	1.0	5	2.5
Type 12	1	0.5	1	0.5	1	0.5	1	0.5	0	0
Type 18	0	0	0	0	1	0.5	0	0	0	0
Type 19	20	9.8	15	7.3	12	6.0	4	2.0	6	2.9
Type 28	1	0.5	0	0	0	0	0	0	0	0
Provisional type 32	0	0	1	0.5	0	0	0	0	0	0
Provisional type 43	0	0	0	0	0	0	1	0.5	0	0
Provisional type 46	1	0.5	0	0	0	0	0	0	0	0
Undetermined	3	1.5	0	0	3	1.5	6	2.9	4	2.0

* The radio school received sulfadiazine 0.5 Gm. twice a day from November 20 through December 22. The pier personnel received sulfadiazine 1 Gm. daily from December 11 through December 22.

This complete absence of scarlet fever following the withdrawal of sulfadiazine was unexpected, particularly when the results of the throat culture surveys are considered. A summary of these surveys, made on both the radio school and pier personnel, is given in table 1. It is evident from this table that, although both the group A and type 19 carrier rates decreased in the radio school during the period of sulfadiazine prophylaxis, the rates were still rather high when the drug was discontinued; furthermore, surveys on the pier personnel before and after sulfadiazine medication revealed no significant drop in either the group A or the type 19 carrier rate.

A factor which may have played a significant part in delaying the recurrence of scarlet fever following the withdrawal of sulfadiazine was the intervening Christmas and New Years holidays. At this time, because many of the men were given short periods of leave, a number of the carriers and susceptible persons were temporarily removed from the epidemic area. A favorable effect of holiday periods on epidemics of strepto-

coccic respiratory infections has been noted previously by Thomson and Glazebrook.[7]

From table 1 it is apparent that carriers of type 6 hemolytic streptococci were also prevalent. With a carrier rate of almost 10 per cent in the radio school, it seems improbable that this strain failed to induce

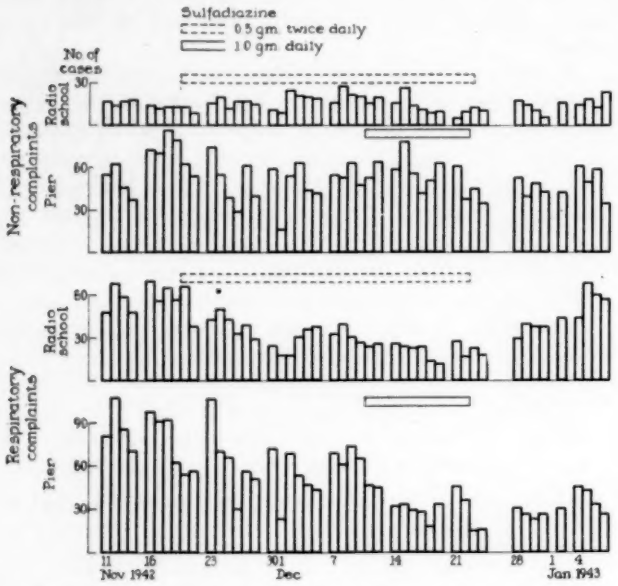

Chart 2.—Effect of sulfadiazine administration on daily sick calls.

respiratory infections. Despite the fact that laboratory tests [8] showed the type 6 strain to be as potent a producer of erythrogenic toxin as the type 19, none of the cases of scarlet fever cultured during the epidemic were due to this strain. Just what role it may have played in causing pharyngitis and tonsillitis was not ascertained.

When the striking effects of sulfadiazine in lowering the incidence of scarlet fever were observed, it was of considerable interest to determine its influence on the number of daily sick calls. Since the final diagnosis is not recorded at sick call, these data were compiled only on the basis of complaints. In chart 2 the complaints for both the pier and the radio school personnel have been divided into respiratory and nonrespiratory categories and the number of each charted daily with

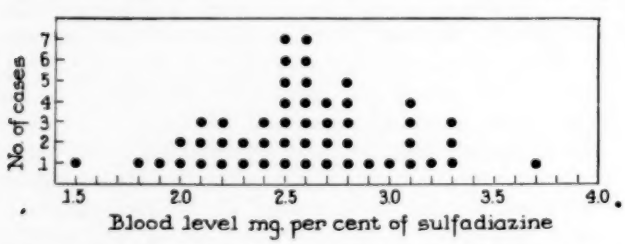

Chart 3.—Concentration of free sulfadiazine in the blood of 50 men from the radio school.

the omission of Sundays and holidays. It is clear from this chart that for both groups the number of men reporting to sick call with respiratory complaints decreased definitely during the period of prophylaxis, while the number with nonrespiratory complaints remained essentially the same. The average number of daily sick calls made for respiratory and nonrespiratory complaints at the radio school and pier, both before and during sulfadiazine administration, are shown in table 2. The smaller number of sick calls for respiratory complaints among the pier personnel during the three weeks before this group was started on sulfadiazine may have been due to a decrease in infectious contacts from the radio school personnel.

Sulfanilamide has been employed almost exclusively by the investigators reporting on the use of sulfonamide compounds for the prevention of rheumatic fever. Only Hansen, Platou and Dwan [1] report giving several of their patients sulfadiazine for short periods, but they make no mention of the blood concentrations of the drug. In those instances in which sulfanilamide has been employed, the dose has varied between 0.6 Gm. and 3 Gm. daily and the great majority of the patients were under 16 years of age. In the present study the blood concentration of sulfadiazine was determined on 50 men from the radio school. The blood was taken about six hours after the morning dose on the twelfth day after the drug was begun. The distribution of the blood levels of the free drug is shown in chart 3. The

TABLE 2.—*Average Daily Sick Calls Before and During Sulfadiazine Prophylaxis*

Periods	Radio School Personnel		Pier Personnel	
	Nonrespiratory Complaints	Respiratory Complaints	Nonrespiratory Complaints	Respiratory Complaints
Before sulfadiazine prophylaxis	14.5	59.5	50.2	61.6
During sulfadiazine prophylaxis	16.0	29.0	48.6	28.1

blood concentrations varied between 1.5 mg. and 3.7 mg. per hundred cubic centimeters with an average and median of 2.6 mg. per hundred cubic centimeters.

Toxic reactions following the use of sulfanilamide in prophylactic doses in rheumatic subjects have been reported to vary from a few and mild by some workers to as high as 37 per cent in one report.[9] In the present study, toxic reactions ascribable to sulfadiazine were very few. Only 3 men had rashes due to the drug; a fourth person who had previously suffered from urticaria developed an urticarial rash while taking sulfadiazine; this rash disappeared when the drug was discontinued but reappeared several days later in the absence of sulfadiazine. No gastrointestinal disturbances were reported by the men taking sulfadiazine and, while no systematic observations were made concerning blood changes or renal disturbances, no symptoms referable to such complications were reported.

COMMENT

This study indicates that sulfadiazine in doses of 1 Gm. daily can effectively control an outbreak of scarlet fever. The conditions prevailing at the station were such that the entire personnel could be divided into two groups, one of which served as a control for the other during the period of prophylaxis.

7. Thomson, Scott, and Glazebrook, A. J.: Infectious Diseases in a Semiclosed Community, J. Hyg. **41**: 570-615 (Dec.) 1941.

8. The Division of Laboratories and Research of the New York State Department of Health, Albany, cooperated in testing the toxigenic activities of these strains.

9. Stowell, D. D., and Button, W. H., Jr.: Observations on the Prophylactic Use of Sulfanilamide on Rheumatic Patients, with Report of One Death, J. A. M. A. **117**: 2164-2166 (Dec. 20) 1941.

The results are even more striking when the epidemiologic situation is considered: About one fourth of the men remaining at the station for four months apparently acted as a focus from which a transient group, four times as large, was being infected. These conditions in certain respects resembled those which Webster [10] and Greenwood and his associates [11] have shown to be most favorable for the perpetuation of epidemics among experimental animals and which Green [12] and Thomson and Glazebrook [7] have described in British naval training schools, where they have studied epidemics of streptococcic respiratory infections.

There can be little question that sulfadiazine in small doses was effective in controlling the epidemic in both groups. The radio school personnel was started on treatment first, with a resulting sharp decrease in case rate, while simultaneously the incidence among the pier personnel remained high for the next three weeks. The pier group was then started on sulfadiazine, and both groups were continued on this drug for twelve days. This brought about a complete remission of scarlet fever in both which persisted until the end of the period of observation sixteen days after sulfadiazine was discontinued. These results accord with those reported by others concerning the efficacy of sulfanilamide in preventing streptococcic infections of the respiratory tract in rheumatic subjects.

The number of respiratory complaints at the daily sick call were also much reduced in both groups in the period during which sulfadiazine was given. This was not surprising, as many of these complaints were probably due to infections with group A hemolytic streptococci as well as to other sulfonamide susceptible micro-organisms.

The remission in scarlet fever, despite the persisting high carrier rate of type 19 streptococci, for at least sixteen days after withdrawal of the sulfadiazine was not expected. This may be explained in part by the intervening holidays, when many men were given leave, which probably caused a decrease in the number of both carriers and susceptible persons. On the other hand, it was not surprising to find a high carrier rate persisting after the use of the drug. Kuttner and Reyersbach [1] have shown that children receiving small doses of sulfanilamide may become carriers of group A hemolytic streptococci without showing any evidence of infection; we have found that even in full therapeutic doses sulfadiazine often fails to rid patients of these micro-organisms.

In the relatively small prophylactic doses used, sulfadiazine elicited a minimum of toxic symptoms; while extensive investigations of its effect on the bone marrow and kidneys of these subjects were not practical, no manifestations were encountered that would indicate any disturbance of these organs. It is now generally agreed that sulfadiazine is the least toxic member of the sulfonamide group. This report confirms that opinion, as the proportion of toxic reactions occurring in this study is less than that reported by any of the workers employing sulfanilamide prophylaxis in rheumatic children.

Besides the danger of immediate toxic reactions in employing sulfonamide compounds in prophylactic doses, one must bear in mind the possibility of producing drug fast strains as a future hazard and also the possibility of so sensitizing large groups of persons to the sulfonamide compounds that they might subsequently be unable to take these drugs for therapeutic reasons. The first possibility is largely speculative; the second has not been encountered in rheumatic subjects who have taken small doses of sulfanilamide over long periods.

The successful demonstration of chemoprophylaxis on a large scale to control an epidemic of scarlet fever raises the question as to when it should be employed. It probably should reinforce rather than replace other hygienic measures. The relative benefits, however, must be balanced against the disadvantages in considering any therapeutic measure. The disadvantages discussed would seem at present to be comparatively slight, especially when sulfadiazine is used. It must be recognized, moreover, that the minimum effective prophylactic dose has not yet been determined. The relative benefits will vary under different circumstances and hence must be judged in the light of all available data concerning the particular epidemiologic situation. The attitude might be assumed that all situations favorable to the development of streptococcic infections of the upper respiratory tract demand the immediate application of the most effective prophylaxis, because a certain number of such cases lead to rheumatic fever and nephritis. At the present time it does not seem practical to apply chemoprophylaxis on a large scale under endemic conditions in which a normal population is involved. The application of the modern technics for grouping and typing streptococci are of considerable help in deciding whether or not conditions are favorable for the development of an epidemic. For example, at this station, through which men from all sections of the country were funneled rapidly, a certain number of cases due to many different types of streptococci were to be expected and would hardly constitute an indication for large scale chemoprophylaxis. When, in contrast, all cases were found to be due to a single type of strongly invasive capacity, the danger of rapid spread was great and the most effective prophylactic measures were indicated. If in addition the normal functions of an institution or community are seriously threatened by an epidemic, current arguments against such a method of control carry relatively little weight. Apparently the sulfonamide compounds in small doses, and especially sulfadiazine, offer very effective means for controlling streptococcic infections of the respiratory tract without disrupting essential military activities.

SUMMARY AND CONCLUSIONS

1. An epidemic of scarlet fever due to group A type 19 hemolytic streptococci occurred at a United States naval station.

2. Sulfadiazine in prophylactic doses of 1 Gm. daily effectively controlled this epidemic and caused a pronounced reduction in the number of daily sick calls due to other respiratory complaints.

3. Among several thousand men treated only 3 had rashes due to sulfadiazine, and no major toxic reactions were observed.

4. Sufficient evidence has been obtained to justify the use of this drug in controlling epidemics of streptococcic infections of the respiratory tract.

10. Webster, Leslie T.: Experimental Epidemiology, Medicine **11**: 321-344 (Sept.) 1932.

11. Greenwood, Major; Hill, A. B.; Topley, W. W. C., and Wilson, J.: Experimental Epidemiology, Special Report Series No. 209, Medical Research Council, 1936.

12. Green, C. A.: Acute Rheumatism in the Recruit, M. Press **205**: 523-526 (June 25) 1941.

"ARC FLASH" CONJUNCTIVITIS

ACTINIC CONJUNCTIVITIS FROM ELECTRIC WELDING ARC

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When the current war came to Portland, Oregon, early in 1941, it brought with it a host of problems new to the medical profession of this community. The establishment of three major Kaiser shipyards and several other smaller Navy contract shipyards in the heart of the lumbering area could not do otherwise. Prior to 1941 the chief industries in Oregon and southern Washington were lumbering, fishing and agriculture, and their importance has continued. At the same time in the past twenty-one months approximately 85,000 men and 25,000 women have left their regular pursuits and turned to employment in steel shipbuilding. It is safe to say that 80 to 90 per cent of this group are now occupied in work foreign to their previous employment in type, strenuousness, speed, hours and location. Steel shipbuilding now ranks ahead of all other industries in this area, and the problems which it introduces in health and industrial hygiene are new to the employees and their physicians. In protecting the health of these employees it has been and continues to be extremely important, therefore, that both the workers and their physicians in the shipyards and the community shall receive the fullest possible instruction in shipyard hygiene, health hazards and safety practices. Because the Oregon Shipbuilding Corporation has been one of the foremost shipyards in rate of production of liberty freighters in the United States and the training ground for a major share of the workers of all the shipyards in this community, because Portland has shared equally with the nation in doctor shortages, and because our local doctors have been too busy to do postgraduate study with experienced industrial physicians, it has been our good, or bad, fortune to have had to find the answers to many of our medical problems in the school of experience. This has been true in many fields, and particularly is this true in the case of electric arc welding as applied to eye injuries.

For the first six months 40 per cent of the treatments administered in the shipyard dispensary were for eye complaints. With better workman training and adequate eye protective devices this percentage has gradually dropped, but it still remains above 30 per cent of all treatments, which have totaled over 500,000 in twenty-one months. In the first year of production the supply of goggles and other safety equipment was constantly inadequate to cover our rapidly increasing number of employees. Many hundreds of eye injuries that were then seen were preventable and have since been prevented. Inherent in steel work is a potentially high incidence of eye trouble, and certain recent changes in fabrication methods have increased the dangers of eye injury. I have reference to one of the most outstanding changes from the last war, namely electric arc welding. A multitude of uses have been found for welding not previously employed. Overlapping of steel plates is replaced with edge to edge welding; immobilization and temporary union of steel objects is secured through tack welding of "dogs," "clips," "strongbacks" and so on. Welding has reached such importance that a shortage of welding machines now becomes one limiting factor in the rate and volume of Kaiser ship production. Oregon Shipbuilding Corporation alone now employs 3,800 male and 1,650 female welders. Welding is done in every part of the yard, and therefore at least 30,000 of the 33,000 employees are, at various times of the day or night, exposed to possible eye injury through radiation and other hazards found in this process. "Arc flash" eye injury is important and frequent with these persons, and the information given here concerning the recognition and treatment of the condition is recorded with the hope that it may prove useful to the physicians of this and other war production communities.

NATURE OF THE INJURY

Actinic or ultraviolet conjunctivitis bears the unfortunate name of "arc flash" and may be defined as a conjunctivitis, usually of both eyes, caused by excessive exposure to the welder's electric arc and characterized by delayed onset, self-limited course of twenty-four hours, pronounced bulbar hyperemia, swelling of the lids, slight "sunburn" of the face, absence of discharge other than tears, extreme photophobia and a feeling of sand in the eyes.

The name "flash" is heavy with the implication that this eye injury is commonly incurred through an incautious or unguarded exposure of the eyes to the flash of the welder's first brilliant contact spark and thus is an instantaneous affair. This can occur, but the injured person must be very close to the arc, within a foot or two, and this proves infrequently the case. It is so usual as to be the rule that the painful eyes of "arc flash" result from an excessive exposure to the arc over a minimum of several minutes, more commonly several hours of time spread through the working shift. It is a cumulative injury similar in pathogenesis to that of snow blindness and sunburn, which obviously are quantitatively related to skin pigmentation and length of time spent in the sun's rays. For this reason it occasionally has been necessary to change the location of work for certain very blond or red haired workers from shops in which they were constantly bombarded by ultraviolet radiation from nearby welding operations. The oxyacetylene torch does not commonly cause "arc flash."

At Oregon Shipbuilding Corporation we saw several hundred cases of true radiation conjunctivitis during the first year, most frequently among our new employees. During our second year, with a much larger payroll and two to three times as great a rate of ship production, with proportionate increase in total welding, we have seen relatively little of the arc flash "red eyes." At Kaiser Company, Inc., Portland, with 24,000 employees, currently in the first year of production, history is repeating itself and a far higher percentage of "arc flash" injury is occurring than at Oregon Shipbuilding Corporation.

Accurate figures on the incidence of arc flash eye injury are impossible to secure for various reasons. Purely for the sake of the record the figures are included and their heading is self explanatory. They must be taken with certain reservations and are more interesting than conclusive. The figures represent workmen who filed reports of accident with the State Industrial Accident Commission. In the "no time loss" cases either only part of the day of injury was lost or a claim was filed so that the state would reimburse the attending ophthalmologist. Any workman losing time other than the day of injury is considered to have suffered a "time

loss" accident. These figures are, of course, low, for a large proportion of flash injured workmen have treated themselves at home or have been treated in the first aid units at the shipyards without time loss, in which case no state claim has been filed. Many others have not bothered to file a claim for a day of time loss, so they do not appear in the "arc flash" records.

Unfortunately, a number of the cases in this group represent questionable diagnoses, even though reported to the State Industrial Accident Commission as "arc flash." Until recent weeks there was no occupational disease law in Oregon. "Arc flash" was accepted by the State Industrial Accident Commission as a compensable "accident." As a result, physicians when in doubt as to the exact diagnosis have not infrequently accepted the workman's theory and have listed a nonspecific conjunctivitis as an [alleged] "arc flash."

At this point I ask the reader's forebearance and close attention in the abandonment of the usual orderly medical article format of pathogenesis, signs and symptoms to facilitate presentation in a form more apt to reveal the nature of arc flash injury.

In the "typical case" the workman leaves the job in a healthy condition and is entirely unaware that he has received eye injury until he has been at home for several hours. The day shift man usually wakens at midnight or later with the painful, sandy, swollen eyes described in the definition. One rarely sees the injured person during the shift in which he has received the ultraviolet 'overdose,' although on occasion one will see a new workman who received a very heavy irradiation early in the shift and begins to feel pain and develop redness toward the end of the shift. This latent period between injury and onset of symptoms is undeviating except in fuse box explosions and the like, a point emphasized in personal communications by Dr. Hedwig S. Kuhn. The strongest confirmatory point that "arc flash" is not due to the single bright flash but rather to an accumulated excessive exposure is the fact that almost without exception the injured workman is caught by surprise in the middle of the night, as aforementioned, having been entirely unaware at the time of injury that he was receiving trauma sufficient to elicit a (delayed) inflammatory response.

It is commonplace for workmen to enter our "eye treatment" room in the first aid unit seeking treatment for "arc flash." Examination reveals normal eyes, and further questioning brings out some such story as this: "I have no pain, but I was working near a welder a few minutes ago when he struck an arc. I'm sure I was flashed, so I want some of that medicine put in my eyes which you use to prevent arc flash trouble." Most of the workmen believe stanchly that we have such a medicine. The misconception has arisen through a lack of understanding of the pathogenesis of radiation conjunctivitis. The workman who thinks he has received a "flash" injury through exposure to a bright flash, who receives treatment of any sort immediately afterward and develops no symptoms, naturally assumes that this treatment has been prophylactic. In actuality he has had no "injury." This occurs many times daily, and over months of time the shipyard employees have come to believe this obvious fallacy. As a result, our records are misleading and we have for some months attempted to keep a record of "alleged arc flash" as opposed to "real, clinical flash" with red, painful eyes.

The confusion in our records on "alleged" and "real clinical" arc flash has caused much trouble in that any workman who develops eye trouble for any one of a number of reasons tends to put the blame for the pathologic condition on some previous alleged "arc flash" and he will find corroboration in our recorded, inaccurate diagnosis. Close questioning here almost invariably reveals that the workman has reference to some "bright flash," sine subsequent symptoms, experienced days or weeks before. One sees here again the age old practice of seeking an obvious cause for a disease process often far removed from the real cause.

TABLE 1.—*Figures on Arc Flash and Foreign Body Cases, Oregon Shipbuilding Corporation, Period of June 1941 to April 1943*

Date	Injury	Total	Non-Time Loss	Time Loss	Days Lost	Average Days Lost per Time Loss Case	Average Monthly Payroll
June* 1941	Arc flash	4	4	..	..	....	.....
	Foreign body	7	5	2	2	1	
July 1941	Arc flash	4	1	3	6	2	2,500
	Foreign body	13	12	1	16	16	
Aug. 1941	Arc flash	16	10	6	7	1.17	5,300
	Foreign body	22	13	9	45	5	
Sept. 1941	Arc flash	21	7	14	18	1.28	7,100
	Foreign body	25	13	12	45	3.75	
Oct. 1941	Arc flash	27	13	14	50½	3.61	9,800
	Foreign body	33	17	16	101	6.31	
Nov. 1941	Arc flash	30	21	9	23¼	2.58	12,200
	Foreign body	45	31	14	41	2.93	
Dec. 1941	Arc flash	22	6	16	31	1.94	14,600
	Foreign body	25	9	16	49	3.06	
Jan. 1942	Arc flash	60	28	32	91	2.84	17,100
	Foreign body	94	49	45	113½	2.52	
Feb. 1942	Arc flash	31	12	19	39	2.05	22,600
	Foreign body	71	43	28	121½	4.34	
March 1942	Arc flash	40	20	20	57	2.85	27,200
	Foreign body	79	48	31	158½	5.11	
April 1942	Arc flash	59	35	24	54½	2.27	30,100
	Foreign body	98	53	45	242½	5.39	
May 1942	Arc flash	53	29	24	73½	3.06	30,800
	Foreign body	116	65	51	2,103	41.24	
June 1942	Arc flash	56	26	30	66½	2.22	30,000
	Foreign body	101	50	51	335	6.57	
July 1942	Arc flash	51	23	28	73	2.61	32,400
	Foreign body	114	76	38	183	4.82	
Aug. 1942	Arc flash	54	28	26	63½	2.44	34,900
	Foreign body	216	142	74	232	3.14	
Sept. 1942	Arc flash	92	55	37	56	1.51	34,200
	Foreign body	417	258	159	338	2.13	
Oct. 1942	Arc flash	76	44	32	78	2.44	32,900
	Foreign body	394	245	149	428	2.87	
Nov. 1942	Arc flash	57	36	21	42	2	33,100
	Foreign body	359	218	141	286	2.03	
Dec. 1942	Arc flash	77	45	32	111	3.47	33,600
	Foreign body	309	173	136	342	2.51	
Jan. 1943	Arc flash	79	32	47	174	3.70	33,800
	Foreign body	269	134	135	1,480	10.97	
Feb. 1943	Arc flash	76	37	39	118	3.03	34,800
	Foreign body	267	155	112	445	3.98	
March 1943	Arc flash	92	43	49	192	3.92	33,500
	Foreign body	281	172	109	256	2.35	
April 1943	Arc flash	80	34	46	158	3.43	33,500
	Foreign body	277	185	92	182	1.98	

* Covers March, April and May.

The misconception exists that "arc flash" injury is more apt to occur at night. We have not found this to be the case. After dusk the workman's tinted protective goggles are put aside because of interference with vision in the semidarkness prevailing under coastal "dimout" conditions. The probable increased exposure to "arc" thus engendered is usually minimized because of the increased perceptibility of the welders' arc with consequent exercise of greater caution by those exposed.

The relative infrequency of "arc flash" injury to one eye is emphasized. If a workman with inadequate protection has held material being welded for several minutes to hours and thereby received heavy radiation to one side of his face, he will display a unilateral sunburn and "flash" injury of the eye on the exposed side.

We observe a hard and fast rule that a workman with one inflamed eye does not have an "arc flash" injury until foreign body injury or other types of conjunctivitis have been ruled out by diligent examination.

The pathologic changes of "arc flash" conjunctivitis are confined to the superficial structures of the eye. The slit lamp reveals some superficial epithelial devitalization and minute edematous blebs on and in the epithelium of the cornea which is quickly repaired within twelve to eighteen hours after onset of symptoms. The cornea, iris and lens absorb the ultraviolet rays and prevent penetration, thereby protecting the deeper structures of the eye. We have found no evidence that this temporary injury to the corneal epithelium either permits ready bacterial invasion or contributes to permanent injury of the cornea even though frequently repeated.

To return to the discussion of the "typical case," we find that "arc flash" conjunctivitis is self limited, that the photophobia and pain last from twelve to eighteen hours from the time of onset and that some workmen lose no time, while the severely affected person needs miss at the most only one shift. Many men will lay off for several days, but this absenteeism cannot legitimately be attributed to "real" flash injury. Apropos of this matter of unduly prolonged time loss for "arc flash," one may note in table 1 the definite trend toward increase of average days lost from "arc flash" injury from 1.17 days in August 1941 to 3.92 days in March 1943, a change which can be laid only to errors of diagnosis and wilful absenteeism. On the other hand, in the first year of our operation, when "arc flash" was quite common, I found that our men displayed fortitude of great degree, remaining on the job with very painful, red eyes, against my strongest advice, motivated largely in this obstinacy by the bonanza wages. It has not been my custom to try to dictate to the workman who presents himself for care of a definite arc flash whether he shall leave the job or remain, unless he chooses to ignore his personal safety. The degree of photophobia and pain usually has determined his willingness to work or go home.

TABLE 2.—*Figures on Arc Flash and Foreign Body Cases, Kaiser Company, Inc., Portland, Period of June 1942 to April 1943*

Date	Injury	Total	Non-Time Loss	Time Loss	Days Lost	Average Days Lost per Time Loss Case	Average Monthly Payroll
June 1942	Arc flash	4	1	3	6	2	3,353
	Foreign body	8	7	1	2	2	
July 1942	Arc flash	6	4	2	6	3	4,647
	Foreign body	6	2	4	9	2.25	
Aug. 1942	Arc flash	2	1	1	2	2	6,757
	Foreign body	8	5	3	7	2.33	
Sept. 1942	Arc flash	8	3	5	19	3.8	9,597
	Foreign body	34	16	18	48	2.67	
Oct. 1942	Arc flash	20	11	9	18	2	13,782
	Foreign body	31	14	17	36	2.12	
Nov. 1942	Arc flash	23	8	15	36	2.4	16,215
	Foreign body	49	19	30	94	3.13	
Dec. 1942	Arc flash	35	14	21	54	2.57	16,430
	Foreign body	62	31	31	75	2.42	
Jan. 1943	Arc flash	31	15	16	40	2.5	18,711
	Foreign body	48	19	29	97	3.34	
Feb. 1943	Arc flash	35	15	20	70	3.5	20,961
	Foreign body	63	27	36	177	4.92	
March 1943	Arc flash	39	20	19	64	3.05	17,269
	Foreign body	52	31	21	77	3.19	
April 1943	Arc flash	22	8	14	33	2.36	17,452
	Foreifn body	40	21	19	73	3.84	

TREATMENT

Because of the fleeting nature of this injury and its affection of the superficial structures, our treatment is directed toward symptomatic relief of local pain, redness and heat, iris spasm and photophobia. The "sandy" pain is of such degree that general sedation is frequently indicated. The various agents employed are:

1. A darkened room or dark glasses.
2. Cold applications to the eyes.
3. A local anesthetic applied to the eyes; in watery solution while on the job and for immediate relief, in ointment base at night while attempting to sleep. The following are suggested: in water, pontocaine, butyn; in ointment, holocaine, metycaine, butyn.
4. A vasoconstricting drug such as ephedrine or epinephrine.
5. Occasionally 1 per cent homatropine to relieve iris spasm in severe cases.
6. A lubricant to relieve corneal drying—castor oil or lubricant base anesthetic.
7. Analgesics and sedatives in the very severe cases.

It has been recommended that the patient be treated for arc flash by gazing into an infra-red lamp for one to two minutes. I have been afraid to use this method and see no reason why it should be either safe or beneficial.

SHIPYARD PROGRAM

Our shipyard program to control this malady has been directed down several main channels:

1. Protective devices have been employed; "calobar" type flash goggles with side guards, helmets, welding clothing, screens surrounding the welder at work.
2. Hazards have been explained through training classes, newspaper articles, labor union news sheet, shipyard magazine, safety pamphlets and the like, and instruction in the methods of protection has been widely disseminated.
3. Ophthalmologists have been brought to the shipyards to instruct medical personnel in the diagnosis and care of eye injuries and diseases. They have also discussed the same problems in medical society meetings.

The most effective educational agent of all in the abolishment of "arc flash" injury has been a personal experience by the individual workman with the exquisitely scratchy pain of the full fledged conjunctivitis. The repeaters are few and they usually have been caught off guard.

SUMMARY

1. Actinic conjunctivitis, or "arc flash," as seen in the Oregon Shipbuilding Corporation and the Kaiser Company, Inc., Portland, among 57,000 shipyard workers exposed at various times to the emanations from electric arc welding, is defined as a conjunctivitis caused by excessive exposure to the welder's electric arc and characterized by delayed onset, self-limited course of twenty-four hours, pronounced bulbar hyperemia, swelling of the lids, slight "sunburn" of the face, absence of discharge other than tears, extreme photophobia and a feeling of sand in the eyes.

2. Treatment is given for relief of symptoms through dark glasses, cold applications and the use of local anesthetic, vasoconstricting, mydriatic, lubricating and sedative preparations.

3. Prophylactic measures are outlined for the patient and his environment which can completely prevent occurrence of the injury.

THE MOTOR COMPLICATIONS OF HERPES ZOSTER

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Motor disturbances in cases of herpes zoster are rarely observed. Broadbent [1] in 1866 was the first to describe a "case of herpetic eruption in the course of branches of the brachial plexus followed by partial paralysis in corresponding motor nerves." Comparatively few observers have since reported instances of this condition, although much attention has been paid to the motor complications of herpes zoster because of their theoretical interest.

Recently we have observed 2 cases of zoster with motor complications in the neurology department of the New York University College of Medicine Clinic. We considered it worth while to review and analyze this problem in the light of our own experience.

REPORT OF CASES

CASE 1.—*History.*—J. McI., a man aged 60, admitted to the clinic on Jan. 17, 1940, complained of pain and weakness in his right thigh and leg. His past history was insignificant except for typhoid forty years and gonorrhea twenty years before. About six months before admission to the clinic, the patient wrenched his right leg in a fall. Following this he had pain in his right hip for two days on walking. Two months prior to admission the patient noticed a sharp pain in his right hip. The pain remained in the hip for about one week and then moved to the right groin and the anterior aspect of the right thigh. There was also soreness in the region of the right shin and knee. At about that time, the patient was so disabled that he had to use a crutch at home. Two weeks after the onset of pain a vesicular rash appeared on the anteromedial aspect of the right thigh, diagnosed by two local physicians as herpes zoster. The patient was referred to the Neurological Clinic for opinion on January 25, ten weeks after onset of the pain and twelve weeks after appearance of the eruption.

Examination.—At that time he showed areas of brownish pigmentation of the skin and a papular eruption suggestive of a resolving herpes zoster on the anteromedial aspect of the right thigh extending from the groin to the knee. The right knee jerk was absent; the other deep reflexes were all active and equal. There was weakness of the right quadriceps and atrophy of the right thigh, mainly of the quadriceps, with fascicular twitchings and fibrillations. Sensory appreciation was normal. Electrical testing showed a reaction of degeneration in the right quadriceps femoris.

Course.—The patient was treated with a high vitamin diet, thiamine hydrochloride 10 mg. three times a day orally, ultraviolet rays, radiant heat and electrical stimulation. There was progressive improvement of the atrophy with gradual return of the muscle power. The right knee jerk returned but was much less active than that of the left.

About three months after admission, the pigmentations and scars following the herpes were still visible; there was considerable atrophy of the thigh—about 1½ inches (3.7 cm.) difference in diameter; fascicular twitchings and fibrillations were still present.

Electrical tests in September 1940 showed all branches of the quadriceps normal except the vastus medialis. A few fascicular twitchings and fibrillations were last seen at this time.

On Jan. 16, 1941 the patient had almost complete return of muscle power. The right knee jerk remained very slightly less active than the left. Some atrophy of the right quadriceps persisted.

CASE 2.—M. McN., a white woman aged 45, was admitted to the clinic on April 9, 1940 with the chief complaint of severe pain and a rash in the region of the right upper arm. Her past history was not significant. About March 1, 1940 the patient felt a severe sharp pain over the occipital region of her head. Two weeks later a vesicular rash appeared over the flexor surface of the entire right arm from the shoulder to the wrist, and the patient gradually lost the use of her arm.

Examination.—When we saw the patient about three months later, on June 6, we found patches of slight discoloration of the skin, which were dry and scaly over the right deltoid muscle and the flexor surface of the right upper arm. There was atrophy of the right deltoid muscle with almost complete paralysis of the deltoid. The right biceps reflex was not obtained. The right triceps reflex was diminished. Sensory examination showed areas of hypalgesia and hypesthesia in the fourth and fifth cervical and part of the sixth cervical segment. There was a reaction of degeneration in the right deltoid muscle.

Course.—The patient was given a high vitamin diet, large doses of thiamine hydrochloride orally, passive and active exercise and galvanic stimulation. On June 20 the biceps reflex, although weak, was obtained. There was progressive improvement in the power of the right deltoid muscle and the atrophy became less pronounced. On Jan. 9, 1941 the muscle power seemed very much improved and the sensory changes had disappeared. The deltoid muscle was still slightly atrophic, the right biceps jerk was somewhat diminished and the triceps jerks were active and almost equal.

On March 20 the muscle power was equal on the two sides. There was no more atrophy. Biceps and triceps jerks were active and equal. The only residual abnormality was a mild contraction in the right shoulder joint.

COMMENT

Disregarding the more frequent cases of involvement of the cranial nerves in the course of herpes zoster, e. g. otic zoster with facial palsy or ophthalmic zoster with oculomotor palsy, we have been able to collect from the literature 42 cases of herpes zoster with motor complications.

An analysis of these, including our own 2 cases, shows the following:

1. The total number of patients is 44.
2. The proportion of males to females is almost 3:1.
3. The age of the patients is not different from that of patients with uncomplicated zoster; the disease most frequently strikes middle aged or older people.
4. Paralysis of muscles of the upper extremity occurs in 20 patients, or 45.5 per cent of the cases. In addition to the aforementioned case of Broadbent,[1] Waller,[2] Fabre [3] and Magnus [4] report zoster cases with palsies of brachial muscles. In the majority of these the deltoid muscle is affected. In some there is an additional involvement of other muscle groups of a great variety. Buzzard [5] describes a case presenting paralysis

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1. Broadbent, W. H.: Case of Herpetic Eruption in the Course of Branches of the Brachial Plexus Followed by Partial Paralysis in Corresponding Motor Nerves, Brit. M. J. **2**: 460, 1866.
2. Waller, G.: Two Cases of Herpes with Motor Paralysis, Brit. M. J. **2**: 560, 1885.
3. Fabre, P.: Le zona, Ann. méd. de Liége, 1881.
4. Magnus, V.: Three Cases of Herpes Zoster Followed by Motor Damage, abstr. Deutsche med. Wchnschr. **29**: 235, 1903.
5. Buzzard, E. F.: Uniradicular Palsies of the Brachial Plexus, Brain **25**: 299, 1902.

of the deltoid, supraspinatus and infraspinatus. Pearson's [6] case shows the deltoid, infraspinatus and latissimus dorsi paralyzed. Gayet and Chaix [7] report 2 cases, the first presenting a paresis of the deltoid and supraspinatus, the second an involvement of the triceps, supraspinatus, thenar and interossei. Valentini's [8] case shows the deltoid and triceps affected; Wilson's [9] the deltoid and biceps. In a few cases [10] almost all the muscles of the arm were paralyzed.

The trunk muscles are affected in 18 cases, or 40.9 per cent. Eleven of these 18 cases are reported by Söderbergh.[11] The other cases, all of them dealing with paralyses of abdominal muscles, are contributed by Taylor,[12] Worster-Drought,[13] Bloedorn and Roberts,[14] Charron,[15] Wright [16] and Rocchi.[17]

Including our first patient, there are only 6 cases involving the muscles of the lower extremity. Cornil's [18] observation resembles our case in many details. He reports paralysis of the left quadriceps with atrophy and partial reaction of degeneration, a herpes eruption in the second, third and fourth lumbar segments and absence of the left knee jerk. In a recent publication, Carter and Dunlop [19] describe 2 similar cases with involvement of the quadriceps muscle. We do not include Greenough's [20] case of crural zoster, since there was considerable doubt "whether the inability to move the limb was due merely to the pain and soreness or whether there was actually some loss of power in the motor nerves."

5. The zoster eruption precedes the paralysis in about three fourths of the cases. It follows the paralysis in one fourth.

6. The time interval between the eruption of the herpes zoster and the appearance of the paralysis (or vice versa) varies from one day to two months. In the case of Pearson,[6] the herpetic eruption appeared one day after the occurrence of the paralysis. Bloedorn and Roberts,[14] Buzzard [5] and Gayet and Chaix [7] (in their first case) mentioned an interval of a "few days," Broadbent,[1] Waller [2] and Weber [21] a period of one week between the cutaneous eruption and the muscular involvement (or vice versa). The interval was two weeks in Cornil's [18] case and our second case, four weeks in the case of Bruce,[22] in Hardy's [23] first case and in our first case. In the case of Fabre [3] a herpes zoster eruption in the deltoid region developed two months after the occurrence of a paralysis of the deltoid muscle. The case of Joffroy [24] with an interval of seven months between paralysis and herpes eruption will be discussed under 7.

The average interval ranges between a few days and a few weeks. The eruption and the paralysis never appear simultaneously.

7. In 100 per cent of the cases the cutaneous eruption and muscular involvement occur in the same side of the body. In about nine tenths of the cases the cutaneous eruption and the muscular weakness exist in the same segmental distribution. The affected segments differ in only 4 cases. To the latter group belong the 2 cases of Joffroy,[24] the first presenting a zoster eruption of the right shoulder and a paresis of adductor pollicis, interossei and hypothenar of the same extremity. In an observation by Bruce [22] the cutaneous eruption was in the eighth and ninth dorsal segment, followed four weeks later by paresis of the homolateral leg.

These cases prove that the atrophic pareses do not necessarily coincide with the cutaneous eruption in localization and extension. However, in Joffroy's [24] second case, in which a herpes zoster eruption in the lower part of the right forearm occurred seven months after the development of a paresis of the right deltoid muscle, one might question the identity of the two processes.

8. In 18.8 per cent of the cases the electrical reactions were normal, and in 81.2 per cent there was a diminished response or a reaction of degeneration.

9. In our first case we observed fascicular and fibrillary twitchings in the damaged muscles and were able to demonstrate them in a motion picture. This observation seems to be unique, as fibrillations are not mentioned in any of the other cases. Their absence has been emphasized.[25] Fibrillary twitchings occasionally are observed in zoster of the geniculate ganglion with involvement of the facial nerve.

10. While W. Russell Brain [26] states that palsies are usually permanent, others, e. g. Doucet,[27] claim that, in general, improvement is rapid. Our analysis shows that 16 per cent of the patients recover with no residual abnormalities. The time required for complete recovery is usually one-half to one year, and in only a few cases is it less than two to three months.

Of the patients 81.7 per cent did not recover fully. Some atrophy and muscular weakness persisted when treatment was discontinued after one year or more.

Cases with a fatal outcome are rare. The only reported cases—Hardy's [28] case 2—took the course of an ascending myelitis.

In the 2 cases reported by Carter and Dunlop,[19] showing close resemblance to our first case, there was

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23. Hardy, M.: Du zona, Gaz. d. hôp. **48**: 827, 1876.
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28. Hardy, M.: Du zona, Gaz. d. hôp. **48**: 819, 1876.

slow recovery, with some residual changes after one year. Carter and Dunlop ask whether complete recovery may be possible. Both of our patients were almost completely cured.

The relationship of trauma to the etiology of zoster is problematic. In our first case trauma occurred four months prior to the onset of the presenting symptoms. That zoster occasionally follows a trauma and may be precipitated by noxae is known. Schwimmer [29] observed that a contusion of the shoulder preceded the outbreak of brachial herpes zoster by ten days. In the case of Méresse,[30] a herpes zoster eruption on the right forearm and an extensor paresis of the fingers of the right hand developed a few days after carbon monoxide poisoning. A positive blood Wassermann reaction was found in Weber's [21] case of herpes zoster with paralysis of the left arm, and antisyphilitic treatment led to remarkable improvement. We have seen herpes zoster frequently complicating tabes dorsalis and also hemiplegias, and recently Kobro [31] reported 6 cases of zoster in relation to vertebral lesions of various origin.

The pathogenesis of herpes zoster is not entirely understood. It is commonly accepted that there is usually an inflammatory process of the dorsal root ganglions caused by a filtrable virus. How this virus gains the nervous system and, in cases of motor complications, spreads to the different structures is a much disputed question. The old view, as quoted from S. A. Kinnier Wilson,[9] affirms the fact that the "zoster poison" travels by the blood stream from the nose or throat to the spinal ganglions, where it induces tissue reactions, moving thence along the sensory nerves to the skin, producing a segmental eruption. At the same time the latter can be reached by way of the blood, thus accounting for scattered spots or generalized types. But there are difficulties. That a virus dispersed through the blood should attack only one ganglion is peculiar, while if two are damaged it is equally strange that they should practically always adjoin.

Another view, represented by Montgomery,[32] Lesser,[33] Curschmann and Eisenlohr,[34] Dubler [35] and Marinesco and Draganesco,[36] regards the disease as an ascending neuritis. Montgomery believes that the virus enters the nerve terminals in the skin and ascends, possibly in the lymph spaces, along the nerve sheath, until it strikes the ganglion pertaining to that nerve, and there, finding an exceptionally good culture medium, it grows well and causes an acute inflammation, thus evoking the rash. But, as Wilson states, this notion assumes that the virus first mounts to the ganglion and then returns to the vesicles—an improbable sequence of events.

Wohlwill [37] found the spinal ganglion the most frequently diseased part, but its involvement is not indispensable. There was always a disorder of the primary sensory neuron of the involved segment.

There are several explanations for the occurrence of motor complications in connection with herpes zoster. Söderbergh [38] and Souques and his co-workers [39] believe that the process in the spinal ganglions spreads to the anterior root and explain this form of propagation with the close relationship between ganglion and root. Others, e. g. Kinnier Wilson [9] and Zeiner-Henriksen,[40] deny lesions of the anterior root and consider a spread of the virus among cell groups of ventral horns more likely. The occurrence of fascicular twitchings in our first case may be regarded as additional evidence of damage to the anterior horn cells.

The pathologic process is not necessarily limited to the dorsal root ganglion. This is proved by our analysis. Wohlwill, who tried to demonstrate the variety of pathologic processes, found besides the ganglion the following structures involved: posterior root, cord and its membranes, peripheral nerves, less often the anterior roots and the peripheral sympathetic nerves. The multitude of pathologic changes is corroborated by investigations of Lhermitte and Nicolas,[41] Faure-Beaulieu [42] and Vermès.[43] In a case reported by Lhermitte and his co-workers autopsy findings revealed not only involvement of the spinal ganglions, posterior root and peripheral nerves but also of the posterior horn, gray substance of the anterior horn and very slightly of the anterolateral columns.

Although the lesions caused by herpes zoster primarily affect the sensory system or, as Carter and Dunlop call it, the "segmental sensory neuron," we cannot disregard all these cases presenting motor complications and pathologic changes, as reported by Wohlwill, Lhermitte and others. Trying to express the anatomic basis of herpes zoster, several observers have suggested the term "acute posterior poliomyelitis." As a result of our analysis, Wohlwill's term of a "neuroganglioradiculomyelitis" seems more appropriate.

SUMMARY

In our 2 cases of motor paralysis complicating a herpes zoster the muscles mainly affected were the quadriceps and deltoid respectively.

The occurrence of fascicular and fibrillary twitchings in case 1 is unusual and indicates a spread of the virus to anterior horn cells.

An analysis of 44 cases shows that the pareses do not necessarily coincide with the herpetic eruption in localization and extension. The time interval between the cutaneous eruption and the appearance of the paralysis (or vice versa) may range from one day to two months.

The pathologic changes show a multitude of lesions, with the dorsal root ganglion the most frequently diseased part.

First Avenue and Twenty-Sixth Street.

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CONGENITAL LARYNGEAL STRIDOR

LACK OF RELATION TO THYMIC DISEASES

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There exists a widespread tendency to place the blame for a respiratory abnormality of any magnitude in infancy on the thymus gland, particularly if there is x-ray evidence of thymic enlargement. In the absence of x-ray evidence it is often assumed, as pointed out by Wasson,[1] that the roentgenogram did not accurately portray the situation, and the thymus still may be believed to be the cause of the symptoms. It is not our purpose to review or to evaluate current opinion on thymic enlargement or so-called status thymicolymphaticus. We have been impressed, however, by the apparent confusion of congenital laryngeal stridor with thymic disease as indicated by the fact that in the past three years almost all infants in whom we have established the diagnosis of congenital laryngeal stridor had been referred to us with the diagnosis of enlarged thymus.

This paper thus has been prompted by an experience similar to that reported by Kennedy and New [2] and by Bowman and Jackson.[3] The former authors reported a group of 30 cases of chronic stridor in childhood collected over a ten year period at the Mayo Clinic. Stridor was the chief complaint in only 15 of these cases, but 9 of these 15 had been diagnosed previously as thymic enlargement and in 8 of the 9 roentgen therapy had been given without benefit. Bowman and Jackson reported a similar group of 30 cases of stridor in all of which roentgenograms of the thymus had been made. Enlargement of the thymus was reported in 21 of these cases and in 19 roentgen therapy had been given. In 5 the symptoms seemed to be improved, another 5 showed temporary improvement and in 9 there was no change.

Congenital laryngeal stridor, the most frequently encountered form of chronic stridor in infancy, has been recognized as an entity for many years. Rilliet and Barthez [4] in 1853 described a clinical picture resembling congenital laryngeal stridor, although credit is usually given to Lees,[5] who in 1883 reported the examination of the larynx of a year old child. One month after being examined the child died of diphtheria. Both clinical and postmortem features were presented. Although congenital laryngeal stridor is not often encountered, it is worthy of attention, since, as pointed out by Thomson [6] in 1892, it is apt to cause anxiety owing to its being mistaken for some more serious disease.

Thomson and Turner [7] presented a classic description of congenital laryngeal stridor in 1900 when they stated that:

> The infant who appears normal in other respects is noticed shortly after birth to have noisy breathing. The noise consists of a croaking sound accompanying inspiration, which rises to a high pitched crow when a longer or more vigorous breath is taken; expiration may be accompanied by a short croak when the stridor is loud, but at other times it is noiseless. Even in the more severe cases there are brief intervals during which there is no sound audible, but with this exception the stridor goes on constantly while the child is awake and sometimes when he is asleep. Any emotional excitement or physical cause of deeper breathing, such as exposure to cold air or the exertion of sucking, is apt to intensify the sound. The child's power of crying is unaffected. The breathing, although noisy, is not accompanied by the slightest distress and there is no cyanosis. There is, however, marked inspiratory indrawing of the thoracic and abdominal walls except in the mildest cases. The stridor increases in loudness during the first few months and after remaining about the same for a few more months gradually lessens and disappears during the course of the second year. Long after it ceases to occur habitually, however, it is occasionally brought on again by emotional causes.

The larynx is fully developed at birth and increases in size to puberty, with no sex difference noted in infancy.[8] The structures about the upper aperture are soft and readily collapsible. The epiglottis, cartilages of Wrisberg and apexes of the arytenoid cartilages are composed of yielding, elastic cartilage. The rest of the larynx is of brittle hyaline cartilage. Calcification due to the deposits of lime salts takes place much earlier in hyaline than in the yellow elastic or white fibro cartilage. While perhaps not of importance in the infant's larynx, these factors do point to a fundamental difference in consistency.

Thomson and Turner [7] give an excellent description of the abnormality responsible for congenital laryngeal stridor and from experiments conducted with the larynxes of stillborn infants showed that three component changes occurred: (1) The sides of the larynx were sucked together so as to form a narrow mesial slit; (2) the epiglottis was drawn backward and downward so as to form a slit; (3) the arytenoid cartilages met in the midline while the margins of the anterior portion of the aperture remained unaffected. Although they stated that the change found in congenital laryngeal stridor was merely an exaggeration of the normal infantile type of larynx, they felt that the primary element of etiology was a disturbance of respiratory movements due to some backwardness of cortical control and that the recurring sucking in of the upper aperture of the soft larynx was induced by the ill coordinated and spasmodic nature of the breathing. No other writer has agreed with this opinion, and not one of our cases has shown lack of cortical control.

Sutherland and Lack [9] in 1897 presented 18 cases of stridor in which 6 had been examined with a laryngeal mirror. They described the epiglottis as folding back on itself, the arytenoepiglottic folds being approximated and flaccid, flopping to and fro on respiration and the laryngeal aperture being reduced to a mere slit. With

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the advent of direct laryngoscopy, the pathologic physiology was directly observed. McKenzie [10] reported direct laryngoscopic observations made by D. R. Paterson in which the latter saw "with each inspiration the soft parts of the cricoid, including the arytenoids and interarytenoid folds, 'disappear,' so to speak, into the interior of the larynx, being drawn downward and forward and to such an extent in pronounced cases that the upper border of the cricoid could be seen as a transverse ridge through the stretched mucous membrane." The sides of the orifice were also observed to be sucked in, and when he held one side up with forceps the noise stopped at once.

Hill [8] in 1930 stated that since the structures were of a different histologic structure, predisposing to flaccidity, and were of a different embryologic origin, highly specialized, they might be subject to sufficient variation if not malformation to produce the condition of congenital laryngeal stridor. In order words, the situation was thought to be an exaggeration of the infantile type of larynx, differing from normal only in degree, and that the stridor was probably due to the vibrations of the flabby epiglottis and unsupported arytenoepiglottic folds being sucked inward on inspiration. The pathogenesis described by the latter authors seems fulfilled in our cases.

REPORT OF CASES

Case 1, which was under observation for three years, exemplifies the confusion of this condition with thymic enlargement. It also illustrates the frequency with which infections of the upper respiratory tract occur in these patients.

CASE 1.—J. O., aged 1 month, was seen because of choking and dyspnea which had been present since the age of 5 days. X-ray examinations of the chest purported to show an enlarged thymus; he was given two courses of roentgen therapy within six weeks without relief from symptoms, and a full supracardiac x-ray shadow persisted. Transmitted throat sounds were audible on auscultation of the chest, and there was striking retraction of the lower portion of the sternum on inspiration. At the age of 4 months he was subjected to direct laryngoscopy, at which time it was noted that a redundant mucous membrane over the left arytenoid cartilage dropped over the glottis on inspiration. The vocal cords were normal. Since the symptoms persisted, laryngoscopy was repeated one month later. The same picture was noted and in addition there was some backward curling of the epiglottis with inspiration. The symptoms persisted in varying degree, intensified by infections of the upper respiratory tract, and at the age of 16 months laryngoscopy was again done. The flaccid state of the arytenoids persisted with rotation over the posterior portion of the glottis with each inspiration. The epiglottis was likewise still flaccid. The patient did not return again until the age of 2 years 9 months, at which time he had a chronic infection of the upper respiratory tract but no stridor. Direct examination of the larynx still showed the arytenoids to be covered with an excessive mucous membrane. When seen at the age of 3 years he had a mild pharyngitis but was otherwise well, apparently having completely outgrown the stridor.

CASE 2.—M. M. was noted at birth to have noisy respiration and a slight cough. At the age of 3 weeks a pulmonary infection developed from which he recovered without incident, but reexamination at the age of 7 weeks showed a slight cough, noisy respiration and with each inspiration retraction of the suprasternal notch and of the lower portion of the sternum. He was seen again at the age of 6 months, at which time the stridor seemed to be improving but was still quite pronounced when the patient was placed flat on his back or when he cried vigorously. Direct laryngoscopy at this time showed a tiny soft epiglottis which had a tendency to fold over the glottis on inspiration. The vocal cords moved normally.

CASE 3.—W. B. was seen at the age of 7 weeks with a history of persistent crowing respiration first noted on the second day of life. At that time he had been placed in an oxygen tent because of slight cyanosis, and since an x-ray examination of the chest showed a supposedly enlarged thymus he received two x-ray treatments, but without benefit. The stridor had persisted and he had not taken his feedings well. When examined at the age of 7 weeks a loud crowing sound accompanied by retraction of both the suprasternal notch and the lower sternum was noted with each inspiration. He was moderately undernourished but hyperactive. Direct laryngoscopy revealed a small epiglottis which was occasionally drawn downward and collapsed during inspiration. During three weeks of observation there was no essential change in his condition.

CASE 4.—E. H. had had noisy and difficult breathing since birth. The noise, heard during inspiration, was most pronounced when she was flat on her back. She also had some difficulty in taking feedings. The infant had received two x-ray treatments for questionable thymic enlargement, one at 1 week and the other at 4 weeks, both without benefit. When she was examined at 2 months a loud inspiratory wheeze or stridor was noted along with retraction of the lower portion of the sternum. These symptoms were somewhat relieved by protruding or extending the chin. The jaw was questionably shortened. Direct laryngoscopy revealed a limber epiglottis which on inspiration folded together and was drawn into the glottis, causing definite obstruction.

CASE 5.—R. S. had had difficulty with respiration since birth and had had three x-ray treatments within the first ten days of life, since a roentgenogram of the chest had been interpreted to show an enlarged thymus. However, the stridor persisted and gradually became worse. When seen at the age of 2 months a well defined inspiratory stridor was noted which was considerably relieved by placing the patient face downward. Definite retraction of the sternum accompanied each inspiration. Direct laryngoscopy revealed a small, short, curled epiglottis which was retracted toward the larynx with each inspiration. When the epiglottis was engaged with the laryngoscope the vocal cords were seen to have a normal range of motion with no abnormality. When the epiglottis was held forward the crowing and stridor ceased.

CASE 6.—S. B. was sent to the hospital at the age of 4 months with a diagnosis of enlarged thymus. She had had a low pitched inspiratory wheeze since the age of 3 weeks. Direct laryngoscopy at 4 months revealed an excessively flexible epiglottis with medial contraction of the arytenoids on inspiration. Both vocal cords were visualized and noted to have normal structure and function.

CASE 7.—M. W. was noted to have a stridor at the age of 10 days. This had persisted and the patient presented a mild feeding problem. X-ray examinations of the chest at the age of 6 weeks were negative for enlargement of the thymus. When seen at the University Hospital at the age of 3 months, inspiratory stridor was present and laryngoscopy revealed that the right arytenoid was collapsed anteriorly, and with each inspiration the left arytenoid would also be pulled anteriorly. Vocal cords and epiglottis were normal.

CASE 8.—R. D. began at the age of 10 days to have stridor and difficulty in respiration. When seen at the age of 1 month the crowing inspiratory sounds were obvious. There was no retraction of the sternum but a suggestive slight cyanosis was noted. Direct laryngoscopy revealed no significant evidence of acute infection. The epiglottis was normal in curvature but lacked sufficient cartilaginous support, so that with each inspiration it was retracted into the vestibule.

10. McKenzie, D.: Congenital Laryngeal Stridor with Dysphagia, J. Laryng. & Otol. **40**: 285 (May) 1925.

CASE 9.—F. W. was noted to have a suggestive obstruction to respiration during the first three days of life. This subsided somewhat, but she had some difficulty in eating. At the age of 1 week direct laryngoscopy revealed that the epiglottis was slightly increased in size and had a minimal horseshoe appearance. During normal respiration no signs of abnormality were present, but when the child cried there was a moderate inspiratory sudden swing of the epiglottis over the glottic chink. The larynx was otherwise normal.

CASE 10.—W. C., aged 2 months, had had episodes of difficult breathing and a peculiar grunt since birth. This had frequently been noted just after the child had gone to sleep. The difficulty seemed to be inspiratory, with a slight retraction of the lower part of the sternum and occasionally an expiratory rattle. A noisy gurgling respiration was noted, but there was no difference between inspiration and expiration or any retraction. The laryngologist thought the epiglottis was shorter than normal but he could see no abnormal flaccidity. Although this case is not clear, the symptoms were largely those of laryngeal stridor and were attributed to moderate relaxation of the supraglottic structures.

CASES IN WHICH LARYNGOSCOPY WAS NOT DONE

CASE 11.—J. U. had a crowing inspiratory sound first noticed at the age of 2 weeks. He had had several minor choking spells, but during his fifth week three severe episodes of choking occurred. He was then referred with a diagnosis of laryngismus stridulus. Physical examination revealed the stridor and a questionable short mandible. It was thought that the choking spells were due to eating too fast. X-ray examinations of the chest showed questionable moderate enlargement of the thymus but no significant degree of tracheal compression.

CASE 12.—W. L. was seen at the age of 7 weeks chiefly because of a lumbar meningocele with associated paralysis of the legs and loss of sphincter control, but in addition he had also had wheezing respiratory sounds, noticed since the mother had first seen him at the age of 10 days. This wheeze was not noticed at night or when he was placed on his stomach. Examination revealed the typical inspiratory sounds of congenital laryngeal stridor.

COMMENT

In the study of a patient with chronic stridor a careful history and complete physical examination are essential. Study for thymic disease may be made by fluoroscopy and by films of the chest and neck according to the method of Pancoast and Pendergass.[11] It might be considered axiomatic that any stridor in infancy should be investigated by direct laryngoscopy.[8] According to Tucker[12] the indications for direct investigation of the infant larynx are (1) symptoms of difficulty in phonation, including aphonia and croupy cough, and (2) symptoms of difficulty in breathing, including stridor, dyspnea and wheezing, with evidence of laryngeal obstruction as manifested by indrawing of the suprasternal notch and the tip of the sternum.

Although congenital laryngeal stridor is the most common cause of stridor in early infancy, other conditions may be encountered. However, no attempt will be made to discuss in detail these various conditions, which must be considered in the differential diagnosis of chronic stridor in infancy.[13] Various congenital anomalies, such as a small glottic lumen, congenital web below the glottis and papillomas have been observed, while congenital malformation of the heart associated with rapid respiration and cyanosis has been mistaken for thymic disease. Micrognathia or macroglossia may cause obstruction. Spasm of the laryngeal muscles in tetany may be sufficient to cause noisy respiration. It may be emphasized that simple enlargement of the thymus is rarely a cause of respiratory difficulty. Thymoma or other mediastinal tumor, hypertrophic laryngitis and tuberculous bronchial nodes may produce such symptoms. Adenoid hypertrophy may produce a snoring respiratory sound and persistent cough due to the nasopharyngeal secretion entering the larynx. Perilaryngeal disease, such as retropharyngeal abscess, peritonsillar abscess and cervical abscess, may easily produce stridor. A foreign body should always be considered, especially with the history of an explosive type of cough, while diphtheria and laryngotracheobronchitis may have to be considered in older infants showing signs of acute infection.

Since the symptoms of congenital laryngeal stridor usually disappear spontaneously during the second year, no active treatment is necessary. However, the infant is usually more comfortable and less bothered by respiratory embarrassment if kept on the side or on the face. Patients with congenital laryngeal stridor seem unusually susceptible to respiratory infections and require special care during them. In severe cases tracheotomy may be required. Since infants with congenital laryngeal stridor have some dysphagia, the volume of the formula offered should probably be reduced as much as possible. Iglauer[14] has reported a case in which epiglottidectomy was done with relief from symptoms.

SUMMARY

Congenital laryngeal stridor, the most common form of stridor in infancy, must be differentiated from other congenital abnormalities which interfere with respiration, such as a small glottic lumen, congenital web below the glottis, micrognathia, macroglossia, laryngeal papilloma and cysts. Laryngeal spasm, perilaryngeal abscess, mediastinal tumor, foreign body and at times acute infections are important considerations. However, congenital laryngeal stridor has been most frequently confused with thymic disease, but simple thymic enlargement is rarely responsible for respiratory embarrassment in infancy. The pathology in congenital laryngeal stridor lies in an exaggeration of the infantile type of larynx with undue relaxation of the supraglottic structures. An accurate diagnosis can be made by direct laryngoscopy. The roentgen ray is a valuable aid in the study of these patients but roentgen therapy is without avail. Since this condition is usually outgrown, active therapy is seldom required.

11. Pancoast, H. K., and Pendergass, E. D.: The Modern Roentgenologic Aspects of the Thymus in Infancy, Am. J. Dis. Child. **42**: 192 (July) 1931.

12. Tucker, Gabriel: The Infant Larynx: Direct Laryngoscopic Observations, J. A. M. A. **99**: 23 (Dec. 3) 1932.

13. The classification of conditions that need to be considered is reported by Neffson, A. H., and Wishik, S. M.: Acute Infectious Croup, J. Pediat. **5**: 633 (Oct.), 617 (Nov.), 776 (Dec.) 1934.

14. Iglauer, Samuel: Epiglottidectomy for the Relief of Congenital Laryngeal Stridor, Laryngoscope **32**: 56 (Jan.) 1922.

Podagra.—Gout, gicht (German), gota (Spanish), goutte (French) and gotta (Italian), respectively, have been adapted from the Latin etymon gutta, which implies a drop or coagulation. . . . Gout was known to the ancients as podagra, a Greek derivation from pous, foot, and agra, attack. The selection is not surprising since gouty arthritis appears first in the feet in the majority of afflicted persons.—Talbot, John H.: Gout, New York, Oxford University Press, 1943.

Clinical Notes, Suggestions and New Instruments

THE TREATMENT OF EPIDEMIC KERATOCONJUNCTIVITIS WITH SODIUM SULFATHIAZOLE DESOXYEPHEDRINE

H. S. GRADLE, M.D., CHICAGO, AND G. H. HARRISON, M.D., WAUKEGAN, ILL.

In the stress of these wartimes every man-hour lost, whether due to labor difficulties or to disease, is a distinct setback of the hour of victory. The first cause is beyond medical control, but we can do something about the second. Epidemic keratoconjunctivitis has taken an enormous toll of man-hours during the past year, for the average loss of working time incurred in each case is from fourteen to eighteen days. Consequently any measure that can reduce such wastage is worth trying, even though it may not be uniformly successful. On that basis we are reporting the use of a new therapeutic measure that in our hands has proved worth while. It is realized that the number of cases is small, that the results are only those of clinical observation and that the accurate serologic proof is missing.

Two years ago Turnbull of Los Angeles developed a stabilized solution of sodium sulfathiazole and a vasoconstrictor for the treatment of upper respiratory infections; this solution was later modified for use in ophthalmology. Our interest in the application of the ophthalmic solution in the treatment of epidemic keratoconjunctivitis was a result of a personal communication with Dr. George R. Hazel of the Department of Clinical Research, Abbott Laboratories, who supplied the preparation to us. The solution contains 1 per cent sodium sulfathiazole, stabilized by 0.8 per cent of sodium sulfite to which has been added 0.1 per cent of desoxyephedrine. It is stable, nonirritating and buffered to a p_H of 9.0. The toxicity is low, the lethal dose for mice being approximately 100 mg. per kilogram of body weight. In ophthalmic practice the solution is used as eye drops. It has been administered by H. S. Gradle as two drops in each eye three to five times in twenty-four hours; by G. H. Harrison as one drop in the affected eye every waking hour. In all cases the treatment was continued for a reasonable period of several weeks after the acute phase had subsided. It produces a mild smarting sensation that disappears within a minute or two.

The cases were observed in four distinct and separate series:

1. Those seen in private practice by Dr. H. S. Gradle.
2. Those seen at the Illinois Eye and Ear Infirmary by Dr. H. S. Gradle and members of the staff.
3. Those seen in industrial practice by Dr. G. H. Harrison.
4. Those seen in private practice by Dr. G. H. Harrison.

The total number was an even 50, of which 43 have been followed upward of four weeks. As diagnostic criteria, the following findings were considered:

1. Acute conjunctivitis with conjunctival and periorbital edema and/or pseudomembranes and/or occasional petechial hemorrhages of the conjunctival surface.
2. Preauricular or submaxillary glandular swelling and/or tenderness.
3. Presence of monocytes in conjunctival scrapings, and absence of causative pyogenic organisms.
4. Characteristic corneal involvement.
5. Little or no conjunctival secretion and that of a purely serous type.

At least three of the aforementioned factors were considered necessary for a positive diagnosis. The advance or recession of the pathologic process during the course of treatment was based purely on clinical observation. Unless specific indications were present, no other medication was used except sodium sulfathiazole desoxyephedrine.

We have the definite impression that there are three clinical phases to epidemic keratoconjunctivitis. The first is the stage of active conjunctivitis with concurrent symptoms; in the second stage there are no conjunctival subjective symptoms, but the conjunctiva is still injected and slightly edematous, and during this stage the corneal infiltrates are most apt to appear; in the third stage the conjunctiva is pale but the corneal involvement persists. Stages 1 and 2 merge into each other without any sharp dividing line. It is probable that during stage 2 infectivity disappears, but that is now the subject of investigation with controls by G. H. Harrison. It is our definite clinical impression that under the use of sodium sulfathiazole desoxyephedrine the time of stage 1, which untreated runs from fourteen to eighteen days, is reduced to three to seven days. With other forms of treatment, in our experience, stage 1 runs its full course. Owing to the lack of controls, we are not able to say whether stage 2 and stage 3 are materially influenced by the solution, although we have the impression that corneal infiltrates are fewer and thinner than in cases treated by other methods.

CONCLUSIONS

In sodium sulfathiazole desoxyephedrine we have a new medication that is harmless to the ocular tissues. It appears to be of great value in epidemic keratoconjunctivitis and reduces the time of the acute conjunctival aspect to three to seven days. It does not seem to prevent the appearance of corneal infiltrates, but we have the impression that when infiltrates do appear they are less numerous and less severe than in untreated cases. The subjective discomforts of epidemic keratoconjunctivitis disappear under this treatment with amazing rapidity.

58 East Washington Street.

FAMILIAL SYRINGOMYELIA

COLONEL CHARLES R. MUELLER
MEDICAL CORPS, ARMY OF THE UNITED STATES, AND
MAJOR SAMUEL J. SUGAR
MEDICAL CORPS, ARMY OF THE UNITED STATES

Recently we had an opportunity to study four brothers in a family each disabled by a disorder of the lower extremities characterized by (1) exaggerated callus under the great toe, insidious in appearance; (2) progressive ulceration at the site of the callus, eventuating in amputation at various levels, and (3) anesthesia of varying extent in the part involved.

The condition reported herewith is variously known as familial neurotrophic osseous atrophy,[1] status dysraphicus,[2] myelodysplasia[3] and syringomyelia.[4] No definite causative agent has been disclosed. In the cases under discussion the familial background is striking. Four male siblings and three male relatives have similar, if not the same, disease.

FAMILY HISTORY

All the members of the family investigated were born in Scotland. The father of the four men who now have the disease died at the age of 52 of "paralysis following sleeping sickness." He is not known to have had any disorder of the feet. The mother at 51 is living and well. Her brother and one nephew had amputations of the leg because of gangrene of the foot. Another nephew was discharged from the British army "because of chronic ulcer" of the right great toe. A daughter is living and well without symptoms of disease of the extremities.

The brothers described here were all of fair complexion with light brown hair, brown eyes and of medium stature ranging in height from 5 feet 4 inches to 5 feet 8 inches.

From the Medical Service, Lovell General Hospital, Fort Devens, Massachusetts.

1. Smith, E. M.: Familial Neurotrophic Osseous Atrophy, J. A. M. A. **102**: 593 (Feb. 24) 1934. Kramer, D. W.: Manual of Peripheral Vascular Disorders, Philadelphia, Blakiston Company, 1940.
2. Mulvey, B. E., and Riely, L. A.: Familial Syringomyelia and Status Dysraphicus, Ann. Int. Med. **16**: 966-994 (May) 1942.
3. Fuchs, A.: Ueber den klinischen Nachweis kongenitaler Defektbildunger in den unteren Ruckermarks-abschnitten (Myelodysplasie), Wien. med. Wchnschr. **9**: 2142-2262, 1909.
4. Schlesinger, H.: Die Syringomyelie, Monograph, ed. 2, Leipzig, Deuticke, 1902.

REPORT OF CASES

CASE 1.—J. M., a man aged 28, was inducted into the U. S. Army in February 1941. After a long hike the soldier sought medical care because of a blister under the right great toe. He had noticed a hard callus on the plantar surface of this toe for more than four years. At infrequent intervals the callus would become ulcerated and drain. There was no associated pain, and the ulcer would heal slowly and spontaneously. With local moist heat and rest, the condition improved so that the patient was able to return to duty. However, the blister soon reappeared, became infected and refused to heal completely, so that prolonged hospitalization became necessary. There was no history of migratory phlebitis or intermittent claudication. The general physical examination except for the foot was essentially negative or within normal limits. Both feet were cool and moist. There was no abnormal pallor on elevating or redness on lowering the feet. The pulsations of the dorsalis pedis and posterior tibial arteries were easily palpable and of good volume. On the plantar surface of the right great toe near the medial border a small crater shaped ulcer 1 by 2 cm. in diameter could be seen (fig. 1). This was a dark purple and was surrounded by heavy callus. Roentgenograms of both feet did not reveal any abnormality of the bone. Neurologic examination revealed equal and active achilles and patellar reflexes. Vibration and position sense were intact. There was a definite sensory dissociation confined only to the toes of both feet; light touch was present but pain and temperature sensibility were absent. Circulatory function tests with the oscillometer and intradermal histamine revealed normal circulation and good capillary response. Repeated blood counts, urinalyses, spinal fluid examinations, blood chemistry analyses and Kahn tests all gave negative results or results within normal limits. Roentgenograms of the skull, chest, entire spine and feet were negative. A tuberculin test with 1 : 10,000 dilution was positive.

Fig. 1 (case 1).—Ulcer of right great toe developing at site of callus.

His course in the hospital was marked by an extension of the area of sensory dissociation to include both legs as far as the knees. The ulcer stubbornly refused to heal; the callus surrounding it gradually increased in size and the patient was discharged from the U. S. Army because of physical disability.

CASE 2.—G. M., the eldest brother, at the age of 21 noticed a hard callus under the right great toe. This became ulcerated, drained and refused to heal. The toe became swollen, discolored and gangrenous, so that amputation became necessary. This was followed by gangrene of the second right toe, which brought about the amputation of that digit. A few years later the patient accidentally stepped on a nail. Chronic osteomyelitis of the right foot developed and amputation of the anterior portion of the right foot was performed. A slough developed on the lateral portion of the amputation stump. This stubbornly refused to heal and recently amputation of the remaining portion of the right foot became necessary.

CASE 3.—A. M., the youngest brother, at the age of 19 complained of a painful corn on the right little toe. This became swollen, but roentgenograms showed no destruction of the bone. A draining sinus developed in this toe and a segment of bone discharged spontaneously. The sinus then healed, leaving a flail toe. Subsequent roentgenograms revealed that only a small portion of the proximal phalanx remained (fig. 2). Meanwhile, a callus had developed on the plantar surface of the right great toe. Occasionally a blister would form in this callus but no ulceration followed. Examination revealed sensory dissociation involving only the right little toe. Dorsalis pedis and posterior tibial arteries were normal. Vibration and position sense were intact. He was inducted into the Army and in a few months had to be hospitalized because of a persistent ulcer of the right great toe.

CASE 4.—A. M., the fourth brother, at the age of 16 had a slight injury to the left leg when he vaulted a 5 foot fence. The ankle became swollen but not painful and refused to subside over a period of six months. He was studied thoroughly at a hospital in Boston.[5] "There was diminished sensation of the peroneal nerves of left and right" and the condition was diagnosed as syringomyelia. The ankle grew larger without pain; complete and detailed studies failed to reveal a definite causative agent and amputation below the left knee finally became necessary. Following a fall on the stump, an ulcer formed which was very sluggish in healing but eventually disappeared, so that the patient was able to walk with an artificial limb. At this time blood serologic tests, spinal fluid and neurologic examinations of the mother were all negative.

COMMENT

The clinical picture of intractable callus forming under the large toe, tending to erode and ulcerate and to be associated with progressive anesthesia of the affected extremity, is uncommon. When known to affect other male members of the family tree the diagnosis of syringomyelia or one of its synonyms is always more than likely. The only diseases to be differentiated are syphilis, tuberculosis, osteomyelitis and leprosy. The first three are ruled out on clinical and laboratory evidence. One of us (C. R. M.), who has had clinical experience with leprosy, felt that these cases did not fall into this category.

Fig. 2 (case 3).—Only a small portion of proximal phalanx of right fifth toe remains. This was preceded by a draining sinus and spontaneous discharge of bone.

CONCLUSIONS

1. Four members of a family group present a common disability characterized by callus formation with subsequent ulceration and anesthesia of the great toe.

2. The demonstration of sensory dissociation in three brothers points to syringomyelia as the most likely diagnosis.

3. The disease is further characterized by a tendency to occur only in the males and by a chronic progressive course resisting all forms of treatment.

5. Sullivan, R. F., and Childress, H. M.: An Unusual Case of Painless Swelling of Ankle, New England J. Med. **218**: 258-262 (Feb. 10) 1938.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

HOWARD A. CARTER, Secretary.

MODEL J GALVANIC GENERATOR ACCEPTABLE

Manufacturer: H. G. Fischer & Co., 2323-2345 Wabansia Avenue, Chicago.

The Model J Galvanic Generator is designed primarily for muscle stimulation. It generates five current forms designated by the firm as (1) straight galvanic, (2) galvanic surge, (3) slow sinusoidal, (4) rapid alternating 240 cycle per second and (5) rapid alternating in surges. Four of the currents are for muscle stimulation. Current 2, galvanic surge, and current 3, slow sinusoidal, are designed for muscles deprived of their nerve supply. Currents 4 and 5 are to be used for stimulation of a muscle with nerve supply intact. Current 1 is employed for ion transfer and the usual direct current applications.

Experiments were made on the denervated and normal tibialis anticus muscles of dogs and monkeys. In addition these currents were tested on several patients in the physical therapy clinic of a medical institution as well as on a group of normal subjects. The tests undertaken showed that:

CURRENT 1.—Straight galvanic can be used for any therapeutic procedure requiring a source of direct current. It is suggested that the current be designated "direct current."

Fischer Model J Galvanic Generator

CURRENT 2.—This galvanic surge current will produce muscle contractions of the denervated muscle. Contractions secured with this current are either anodal closing contractions or cathodal closing contractions. The current does not alternate from positive to negative with each electrical cycle. Each surge has the same polarity. Some clinicians might favor this type of current for a paralyzed muscle showing a polar reversal. It might also be used where the polar reactions of the direct current are desirable in addition to the muscular contractions. It is suggested that this current be designated "surging uninterrupted direct current with constant polarity."

CURRENT 3.—This slow sinusoidal current was found to provide adequate muscular contractions of denervated muscles. It is the best of the five currents for the stimulation of the paralyzed muscle. The current form was not checked to determine whether it conformed strictly to the sine law, and in view of former studies it probably does not. However, there is no evidence that it should do so. It is suggested that this current be designated a "surging uninterrupted direct current with alternate polarity."

CURRENT 4.—This rapid alternating, 240 cycles per second, current causes a completely fused and sustained tetanus of the skeletal muscle with an intact nerve supply. It can be used for those therapeutic procedures requiring the so-called "faradic stimulation." It is suggested that this current be designated a "tetanizing current."

CURRENT 5.—This current, rapid, alternating in surges, was found to be effective in stimulating the skeletal muscle with an intact nerve supply. All five currents can be utilized as outlined. Three of the five currents on this generator can be classified as absolutely essential, namely Nos. 1, 3 and 5. Current 2 might be considered essential by some clinicians; however, there is no evidence available that such is the case. The Council considers it justifiable to include such a current on theoretical considerations and in deference to those clinicians who might desire to use such a current. Current 4 might well be included, although it is not an essential current.

While these currents are effective, as outlined, they are not to be considered as ideal by any means. Until ideal currents are developed, this generator should serve a useful purpose.

The Council voted to accept the Model J Galvanic Generator for inclusion in its list of accepted devices.

Council on Pharmacy and Chemistry

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING STATEMENT.

AUSTIN E. SMITH, M.D., Secretary.

DIETHYLSTILBESTROL

The Council first accepted preparations of diethylstilbestrol in 1942 with the stipulation that, in view of the data on toxicity, the acceptance be limited to one year, at which time the question would be reconsidered (THE JOURNAL, June 20, 1942, p. 632). The period having elapsed, the Council reconsidered this matter. It was reported that the literature for the past year contained no report on diethylstilbestrol which would affect the continued acceptance of diethylstilbestrol. The drug's toxicity has not become any more apparent, the clinical assurance which comes from more prolonged use increases confidence in the material, and its efficacy is about what it was judged to be when the first preparations were accepted.

The Council voted, therefore, to extend the period of acceptance of brands of diethylstilbestrol to the end of 1945 (the regular three year period of acceptance) unless in the meantime information becomes available which would necessitate reconsideration of this decision.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary.

DIETHYLSTILBESTROL (See Supplement to New and Nonofficial Remedies, 1942, p. 26).

The following dosage forms have been accepted:

ELI LILLY & COMPANY, INDIANAPOLIS

Ampoules Diethylstilbestrol (in cottonseed oil) 0.5 mg per cc.: 1 cc.

Ampoules Diethylstilbestrol (in cottonseed oil) 1 mg. per cc.: 1 cc.

Ampoules Diethylstilbestrol (in cottonseed oil) 5 mg. per cc.: 1 cc.

Suppositories Diethylstilbestrol: 0.5 mg. and 1 mg.

Tablets Diethylstilbestrol: 0.1 mg., 0.25 mg., 0.5 mg., 1 mg. and 5 mg.

POISON OAK EXTRACT (See New and Nonofficial Remedies, 1942, p. 21).

The following dosage form has been accepted:

PITMAN-MOORE COMPANY, INDIANAPOLIS

Poison Oak Extract with Sterile Diluent: 1 cc. vial, marketed in a package also containing three 0.9 cc. vials of sterile diluent consisting of a sterile isotonic salt solution containing procaine hydrochloride 0.5 per cent and chlorobutanol 0.4 per cent.

Fresh leaves of Rhus diversiloba, dried at temperatures not exceeding 60 C. and sieved to remove stems and leaf midribs, are macerated with absolute ethyl alcohol, using 20 cc. of alcohol for each gram of dried leaves. The extract is filtered through paper, then diluted to five times its original volume by adding absolute ethyl alcohol.

NICOTINIC ACID AMIDE (See New and Nonofficial Remedies, 1942, p. 562).

The following dosage forms have been accepted:

THE WARREN-TEED PRODUCTS CO., COLUMBUS, OHIO

Tablets Nicotinamide: 50 mg.

Sterile Solution Nicotinamide 50 mg. per cc.: 15 cc. vials. Chlorobutanol 0.5 per cent added as a preservative.

NICOTINIC ACID (See New and Nonofficial Remedies, 1942, p. 561).

The following dosage form has been accepted:

THE LAKESIDE LABORATORIES, INC., MILWAUKEE

Ampule Solution Nicotinic Acid 1% W/V, 10 mg. per cc.: 10 cc.

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SATURDAY, JULY 10, 1943

CATARRHAL AND HUMAN SERUM JAUNDICE

The etiology of the disease or diseases commonly called catarrhal jaundice, infective jaundice or infective hepatitis is not at all well understood. While frequently epidemic, it is not clear how it is spread. There is no evidence that water, milk, food or rodents serve as spreaders. The facts at hand point to droplet infection and close personal contact as the means of spreading. As yet a definite etiologic agent has not been found. This is true also in the case of the jaundice that may follow the injection of human blood, plasma or serum, either when used alone, as in transfusion and in treatment with convalescent serum, or as until recently in certain yellow fever vaccines.[1] All the forms of human serum jaundice so far recognized are discussed in full detail in a recent special memorandum by medical officers of the British Ministry of Health.[2] It appears highly probable that further cases of human serum jaundice are bound to occur from the use of pooled convalescent human serum, especially measles as well as mumps and other forms, and especially after transfusion.[3] How human blood products may acquire transmissible icterogenic properties clearly requires investigation. As yet it has not been determined whether there was a history of jaundice in any donor to pooled plasma or serum that caused jaundice.

Findlay and Martin[4] have produced jaundice in 3 human volunteers by instilling into the nares nasal washings in salt solution from as many patients in the preicteric or early icteric stages of jaundice following injections of yellow fever vaccines. In the 3 volunteers the symptoms, which were altogether like those of spontaneous infectious jaundice, came on after twenty-eight, thirty and fifty days. The volunteers had been immunized eight months previously with a yellow fever vaccine that did not cause jaundice. It seems safe to say without going into details that fault cannot be found with the way this experiment was carried out and that the attacks of jaundice in the volunteers were not due to chance infection but to the introduction of an infective icterogenic agent from the nasopharynx of patients with mild forms of jaundice following yellow fever immunization. Findlay and Martin mention that Voegt[5] produced infectious jaundice in human volunteers by the oral administration of duodenal washings and by the subcutaneous and intramuscular injections of serum and blood from patients with the disease. Thus far suitable experiments with human material in a variety of animals have failed to produce infectious jaundice. Whether the infectious agency brought to light by the experiments of Voegt and of Findlay and Martin is responsible for the jaundice in yellow fever inoculation and similar conditions, as well as of the ordinary catarrhal jaundice, will have to be determined, if possible, by future research. The experiments do indicate the presence in the donors of the materials inoculated of an icterogenic agent or agents, perhaps of virus nature.

The length of time between the injection of icterogenic yellow fever vaccine and the appearance of the jaundice, namely from sixty to one hundred days or longer, has been cited as evidence that this form of jaundice is different from catarrhal jaundice, in which the incubation period is usually stated to be much shorter. It is rather doubtful whether the true incubation periods in these cases have been determined exactly enough to be reliable. In catarrhal jaundice it is extremely difficult to fix the date on which infection occurs. In both forms of jaundice the incubation period appears to be subject to wide variation. In the cases of jaundice following convalescent serum and transfusion of human blood or plasma the incubation has been prolonged up to one hundred days and more. The apparent absence of secondary cases in postinoculation jaundice has been advanced as another reason for regarding the two forms of jaundice as different. But it appears that secondary cases may occur. Findlay and Martin refer to an instance of probable transmission of infectious jaundice from inoculated British war personnel to uninoculated African war personnel. Then there is the instance described by Propert:[6] Two

1. The Outbreak of Jaundice in the Army, J. A. M. A. **120**: 51 (Sept. 5) 1942.
2. Homologous Serum Jaundice, Memorandum prepared by medical officers of the Ministry of Health, Lancet **1**: 83 (Jan. 16) 1943.
3. Beeson, P. B.: Jaundice Occurring One to Four Months After Transfusion of Blood or Plasma, J. A. M. A. **121**: 1332 (April 24) 1943.
4. Findlay, G. M., and Martin, N. H.: Jaundice Following Yellow Fever Immunization: Transmission by Intranasal Instillation, Lancet **1**: 678 (May 29) 1943.
5. Voegt, H.: München. med. Wchnschr. **89**: 76, 1942, cited by Findlay and Martin.[4]
6. Propert, S. A.: Hepatitis After Prophylactic Serum, Brit. M. J. **2**: 677 (Sept. 24) 1938.

children came down with jaundice two months after they had been in close contact with 7 children in whom jaundice developed after the injection of convalescent measles serum. From the foregoing it is clear that there must be, in addition to attempts to solve the problems of the etiologic relationship between catarrhal and homologous serum jaundice, attempts to explain how human blood, plasma or serum may acquire transmissible icterogenic properties in order that human blood products may be made safer for therapeutic use.

INTRAVENOUS ALIMENTATION WITH AMINO ACIDS

Among the important problems in the reduction of postoperative mortality after major surgical procedures is the persisting high incidence of pulmonary complications. Walters and his associates demonstrated that pulmonary complications occur with greater frequency in elderly malnourished patients than in others. At the University Hospitals of Cleveland, according to Studley, the mortality rate associated with gastric resection paralleled closely the magnitude of the loss of weight in patients with chronic peptic ulcer. Abbott and Mellors [1] now note that patients with moderate anemia on admission to the hospital, when given 1,000 to 2,000 cc. of whole blood prior to operation, often did much better than patients who had normal blood values on admission and who did not receive transfusions. Apparently, a decrease in the plasma volume associated with chronic dehydration can mask anemia and hypoproteinemia.

An unselected group of 14 patients with carcinoma of the gastrointestinal tract or pyloric stenosis due to ulcer were studied. The authors demonstrated that severe dehydration may exist in patients who have shown a moderate loss of weight and a diminished intake of food and fluid even though vomiting has not occurred or has been minimal. Normal hematocrit values, red blood cell contents, hemoconcentrations and plasma protein concentrations may be obtained when dehydration is accompanied by malnutrition. Patients who have diminished total circulating plasma proteins are likely to have, in addition, a deficit in tissue proteins in the liver and other organs. This is in keeping with the fact that a negative nitrogen balance exists. The authors therefore emphasize that any replacement therapy should aim at restoring the entire protein deficit of the body and of supplying adequate calories so that the body will not need to derive energy from the breakdown of its own tissues.

Whipple, Hartzell, Winfield and Ervin have called attention to the role of hypoproteinemia in patients with wound disruption. Ravdin and his associates noted wound disruption in 70 per cent of dogs operated on in the presence of hypoproteinemia. Ravdin stressed that attempts to restore a normal fluid and electrolyte balance in the presence of hypoproteinemia, without at the same time increasing the colloid osmotic pressure by adding to the plasma, too frequently result only in adding to the extravascular fluid reservoirs. The amino acids are the structural units of tissue proteins; their availability, therefore, is of primary importance. It would appear more logical to associate wound disruption with the presence and the extent of negative nitrogen balance rather than solely with the concentration of plasma protein. Thus the wound of the patient on whom cholecystogastrostomy was performed for carcinoma of the head of the pancreas disrupted when the concentration of protein was above 6 Gm. per hundred cubic centimeters and the catabolic process was probably at its maximum. Later, severe persistent decubitus ulcers and the severe lesion of the mouth healed rapidly when the plasma protein concentration was around 5 Gm. per hundred cubic centimeters and the body was receiving adequate calories and protein so that a relatively normal anabolic process existed. This rapid healing has also been noted in treating similar patients with repeated transfusions of plasma.

Patients with malnutrition require from 50 to 80 Gm. of nutritionally adequate protein daily and sufficient total calories to protect this. This can be accomplished by parenteral administration of dextrose in adequate amounts so that proteins will not be metabolized solely for body energy but rather be spared so that the constituted amino acids may enter into the synthesis of other tissue proteins. Since it is not practical to administer 1,000 cc. of plasma daily (containing approximately 70 Gm. of protein) a preparation containing amino acids more or less in the proportion in which they occur in a biologically complete protein would seem to be a likely substitute. Such a product has been employed at the University Hospitals of Cleveland without any apparent ill effects. Patients have been maintained in positive nitrogen balance when their sole source of nitrogen has been 15 per cent amino acids given intravenously. The only difficulty experienced was associated with administration of adequate amounts of dextrose. Thrombosis of veins frequently occurs after twenty-four to seventy-two hours of administration of 10 per cent dextrose. This difficulty can be avoided by the employment of the Tocantins method of intrasternal injection. Oral feedings or the method of

1. Abbott, W. E., and Mellors, R. C.: Total Circulating Plasma Proteins in Surgical Patients with Dehydration and Malnutrition: Indications for Intravenous Alimentation with Amino Acids, Arch. Surg. **46**: 277 (Feb.) 1943.

oral-jejunal tube feedings advocated by Stengel and Ravdin would be the most physiologic and desirable methods when possible.

Estimations of plasma chloride concentrations are likely to give one a false sense of security. A low plasma chloride level determination does not per se give one an idea as to how much isotonic solution of sodium chloride can be administered safely. The only reliable index of the amount which could be tolerated safely is that of the total circulating plasma proteins. The total circulating plasma proteins frequently fall to a level of clinical importance; it was from 6 to 50 per cent below normal in the reported series.

The authors concluded that amino acids can be employed parenterally as the only source of nitrogen to maintain positive nitrogen balance. When adequate amounts are given along with sufficient calories, an increase in the total circulating plasma proteins can be obtained.

ELECTRICALLY TRANSCRIBED RADIO HEALTH PROGRAMS

On page 755 of this issue of THE JOURNAL appears an announcement of electrically transcribed radio broadcasts for use by county or state medical societies or by approved local groups in their communities. On approval of the local medical society, these transcriptions will be lent to radio stations, health departments, voluntary health agencies, parent-teacher organizations or other community groups. The completion of two series of electrical transcriptions, with additional series planned, rounds out the radio service of the American Medical Association to the profession and the public.

The Association has just concluded its tenth annual series of radio network presentations over the network of the National Broadcasting Company. The last eight have been in dramatic form. Doctors at War has been of special interest and value to the war effort. A script library of more than eight hundred titles for local use is maintained by the Bureau of Health Education and has been extensively used by the local medical societies and local groups approved by them. Many local and state medical societies have contributed excellent scripts to this library, as have health departments and voluntary agencies.

The electrical transcriptions now made available are an effort to continue the service of the medical profession to the public in the field of health education. With depleted ranks of local medical societies, radio broadcasting becomes more difficult even as it grows in importance with wartime health problems facing the people. These radio transcriptions should be widely used in the health education program of the medical profession.

PENICILLIN FAST BACTERIA

According to Schmidt and his associates [1] of Christ Hospital, Cincinnati, penicillin resistant strains of bacteria are developed as a result of unsuccessful penicillin therapy in experimental animals. Four groups of 10 white mice were injected intraperitoneally by the Cincinnati investigators using 10^{-6} cc. doses of a twelve to fourteen hour broth culture of type I or type III pneumococcus. In the control or untreated group there was a 100 per cent type III mortality within twenty-eight hours. There was a 100 per cent survival in the parallel group given repeated 2,000 Oxford units (10 mg.) of penicillin by stomach tube. There was only a 50 per cent survival with half this adequate therapeutic dose (5 mg.) and but a 10 per cent survival following a quarter dose (2.5 mg.).

Pooled cultures were made from the heart bloods of mice which died from these inadequate doses and injected intraperitoneally into a normal (untreated) mouse. Subcultures from the necropsy blood of this mouse were used to infect 40 new mice. These received the same treatment as the first 40. Thus far the procedure has been repeated for six consecutive groups. By the sixth group passage the pneumococci had acquired sufficient penicillin resistance to be practically unaffected by the originally adequate therapeutic dose, 90 per cent of those given 2,000 Oxford units of penicillin dying within fifty-eight hours. A similar, though less pronounced, penicillin resistance was acquired by type I pneumococci.

To test the permanence of this acquired resistance, the resulting penicillin fast strains were passed daily through normal mice. After the thirtieth serial passage the recovered cultures were still penicillin resistant. The acquired resistance is therefore a fairly stable heredity character in penicillin adapted pneumococci.

Susceptibility of the adapted strains was also tested with sulfapyridine. Infections with penicillin resistant pneumococci responded to sulfapyridine therapy as well as infections with the initial penicillin susceptible parent cultures. This proof that acquired penicillin resistance does not alter sulfonamide sensitivity is the converse of a phenomenon previously reported.[2] Other investigators have found that the development of sulfonamide resistance does not alter penicillin sensitivity.

Schmidt believes that his data explain the reported clinical failure of penicillin therapy in subacute bacterial endocarditis caused by Streptococcus viridans,[3] "a disease invariably requiring long term treatment." Whether or not the penicillin fast pneumococci can be resensitized to penicillin by the Tsuchiya technic [4] has not yet been determined.

1. Schmidt, L. H., and Sesler, C. L.: Proc. Soc. Exper. Biol. & Med. **52**: 353 (April) 1943.
2. Powell, H. M., and Janisson, W. A.: Proc. Soc. Exper. Biol. & Med. **49**: 387, 1942.
3. Richards, A. N.: Penicillin, J. A. M. A. **122**: 235 (May 22) 1943.
4. Resensitization of Sulfonamide Fast Bacteria, editorial, J. A. M. A. **121**: 680 (Feb. 27) 1943.

Current Comment

THE FACTS ON PROCUREMENT OF PHYSICIANS FROM NEW YORK STATE

A criticism [1] which appears as a Supplementary Report of the Council, Part VIII, written by the Chairman of the War Participation Committee of the Medical Society of the State of New York, on April 30, 1943, states:

The latest information obtainable from the State Procurement and Assignment Committee is as follows:

Number of physicians from New York in service on Feb. 1, 1943	9,000
Additional listed since February 1	800 to 900
Total	9,800 to 9,900
New York quota for 1942	8,600
New York quota for 1943	2,100
Total	10,700

It is evident, therefore, that New York has not only met its 1942 quota but is on the way to meeting its 1943 quota.

The official records of the Procurement and Assignment Service are derived from the Adjutant General of the U. S. Army, the Surgeon General of the U. S. Navy and the Surgeon General of the United States Public Health Service. Careful tabulations are made from the official lists after the individual physicians' names have been verified against known records. On Jan. 31, 1943 there were 7,460 physicians on duty with the armed forces from the state of New York, while on March 31, 1943 there were 7,676 physicians on duty from that state. During the months of February and March 1,035 were called to duty from the entire country. Each name credited by the Procurement and Assignment Service represents a physician who left a civilian practice and reported for duty with the armed forces. The discrepancy between the figures cited is doubtless due to the difference between the number of physicians who signified their willingness to serve their country in the armed services and the number actually commissioned and on duty.

1. New York State J. Med. **43**: 1109 (June 15) 1943.

THE NURSE TRAINING PROGRAM

Under Medicine and the War in this issue of THE JOURNAL appears a statement by Surg. Gen. Thomas Parran relative to the new training program for nurses initiated by the passage of the Bolton Act. Under this act nurses' training schools which wish to participate in the program may develop speed-up plans for training nurses—one requiring twenty-four months and the other thirty months. During their training the girls will receive tuition, stipends, maintenance fees, distinctive insignia and uniforms. They will be members of a U. S. Cadet Nurse Corps. Thus they will be provided with a profession; the only obligation they assume is an agreement to make their services available to the government or for essential civilian nursing duties for the duration of the war. Girls who were enrolled ninety days before the end of the war will be permitted to complete their training. Unanimous action of the Congress in passing the Bolton Act was a recognition of the fact that the shortage of nurses has reached the danger point. Since a high school training is required for entrance on this course, only some 600,000 girls who graduate from high school each year are eligible and more than 10 per cent of all these graduates must enroll in nurse training to reach the goal that has been set for 1943. No one knows better than do the physicians of this country the importance of good nursing service in the care of the sick. Every physician can aid the war effort by urging on every high school graduate who comes to his attention the desirability of participation in the nurse training program.

MIXED SALIVARY GLAND TUMORS

In a recent review of his extensive observation on mixed tumors of the salivary glands, McFarland [1] points out that the long delay in what is regarded as recurrence of these tumors after removal may lead to the belief in the meantime that treatment has been successful "when no good at all has resulted." By "no good at all" he obviously means so far as permanent cure is concerned because the delay in recurrence cannot but be of benefit to the patient, even if he has not been cured. In view of the apparent recurrence of mixed tumors even twenty, thirty or forty years after operation, McFarland asks "Is any patient, once the victim of such a tumor, ever cured?" One answer to this question would be that certainly at least some patients remain practically cured until they die. Here it should be noted, as explained by McFarland, that not every case of a second tumor is a recurrence due to incomplete removal of the first tumor. The probability that new, independent tumors may appear in the same region sooner or later after removal of a tumor can never be excluded. In view of the accepted rarity of metastasis in these tumors, it is of interest to note that recently Mulligan [2] reviewed 21 cases in which autopsies revealed metastases in the lungs, the liver and other places. McFarland states that after a special study of the results of radiotherapy of mixed salivary gland tumors he did not find a single case in which any real benefit had been obtained from x-rays or radium, and consequently he expresses the belief that it seems useless to attempt to control or modify the growth of these tumors or to postpone recurrence by the use of these agents. This statement and others somewhat similar apply to radiotherapy as practiced in the past. Details of the treatment are not given; possibly in many cases it may have been wholly inadequate. Forms of carcinoma regarded as radioresistant have been found to yield to new methods of radiotherapy, and the possibility that new and improved methods of radiotherapy of mixed salivary tumors, at least in certain cases, may prove to be of value should not be overlooked. These tumors are a challenge to surgery and to radiation, neither one of which can be regarded as having reached the limits of its usefulness.

1. McFarland, Joseph: The Mysterious Mixed Tumors of Salivary Glands, Surg., Gynec. & Obst. **76**: 23 (Jan.) 1943.
2. Mulligan, R. M.: Metastasis of Mixed Tumors of the Salivary Glands, Arch. Path. **35**: 357 (March), 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

ARMY

FEMALE DIETITIANS AND PHYSICAL THERAPY AIDES IN MEDICAL DEPARTMENT OF ARMY

Under an act approved on Dec. 22, 1942 the Congress authorized for the duration of the war and for six months thereafter the employment in the Medical Department of the Army of such female dietetic and physical therapy personnel as are considered necessary by the Secretary of War. Regulations have recently been issued under which such appointments will be made (8 Federal Register 7525, June 8, 1943). According to these regulations the director of dietitians or of physical therapy aides will hold the rank of major, a chief dietitian or chief physical therapy aide the rank of captain, a head dietitian or head physical therapy aide the rank of first lieutenant, and a dietitian or physical therapy aide the rank of second lieutenant.

Original appointments will be made in the grade of dietitian or physical therapy aide, except original appointments made in theaters of operation outside the United States, in which case appointments will be made in such grades as the Surgeon General may deem appropriate. The director of dietitians and the director of physical therapy aides will be designated as such by the Secretary of War for a period of four years, unless sooner terminated. Application for appointment should be made to the Surgeon General, who will furnish the necessary blank forms. The same regulations as to marital status will apply to dietitians and physical therapy aides as apply to Reserve nurses, and the same physical standards will be required as are required for appointment in the Army Nurse Corps. Appointments will not be made after the applicant has reached her forty-fifth birthday.

An applicant to be eligible for appointment as a dietitian must have a bachelor's degree from an approved college with either a major in foods and nutrition or in institutional management. In addition she must have completed a training course for dietitians approved by the Surgeon General. Two years of experience in a hospital approved by the Surgeon General may be substituted for the training course but only in case the experience includes diet therapy, planning adequate menus, supervising employees in food preparation and service, controlling food costs, and ordering food supplies and equipment. One year of such experience must have been within the past ten years.

The minimum requirement for appointment as a physical therapy aide will be completion of two years in an approved college with major emphasis on physical education or biologic science, or graduation from an accredited course of nursing, and in addition the applicant must have completed a training course in physical therapy approved by the Surgeon General.

Female dietitians and physical therapy aides employed by the Medical Department of the Army in the continental United States prior to March 31, 1943 may be appointed in the Medical Department of the Army if they meet the physical requirements, are recommended by the commanding officer of the hospital as being suited to the military service and have had training and experience acceptable to the Surgeon General. Similar provision is made for the appointment of female persons employed by the Medical Department in a civilian status as dietitians or physical therapy aides in overseas hospitals prior to March 31, 1943.

An applicant otherwise qualified will be authorized to appear at her own expense at the nearest army station having adequate facilities for completing a final type physical examination. The first assignment of a dietitian or physical therapy aide will ordinarily be made to a station in the United States, other than appointments made overseas, to afford an opportunity to become familiar with military and medical department procedures. When available, quarters in kind for dietitians and physical therapy aides will be furnished, with due consideration for their relative rank and standard items of bedroom furniture will be furnished. Dietitians and physical therapy aides will be subsisted under the provisions of existing regulations for the operation of messes for duty and patient personnel in an officer status.

DR. BERENS NAMED CIVILIAN CONSULTANT TO OFFICE OF THE AIR SURGEON

Dr. Conrad Berens of New York has been named civilian consultant in ophthalmology to the Office of the Air Surgeon, the War Department announced on June 26. A graduate of the University of Pennsylvania, Dr. Berens is chairman of the American Board of Ophthalmology, chairman of the Section on Ophthalmology of the American Medical Association, director of the New York Eye and Ear Infirmary and professor of ophthalmology at New York University and the author of a textbook on ophthalmology. Beginning in 1939, Dr. Berens served on the committee to select and train civilian pilots. He served as a major in the last war with medical research and examining units. Starting at the School of Aviation Medicine at Mitchel Field, New York, his work necessitated assignment to England and France.

FALSE RUMOR CONCERNING ENLISTMENT OF ARMY SPECIALIZED TRAINING PROGRAM TRAINEES

The Headquarters of the Sixth Service Command, Chicago, has requested that steps be taken to counteract all stories that enlisted men assigned to the Army Specialized Training Program will be required to remain in the Army longer than those not in the program.

Reported rumors from various service commands have stated that A. S. T. P. trainees are compelled to remain in the Army from five to ten years after the present emergency. This rumor is completely false in that the term of enlistment is in no way changed by assignment to the A. S. T. P. All A. S. T. P. men are in the Army under the same conditions as any other enlisted man; that is, the government has inducted him "for the duration of the emergency and six months thereafter."

CAPTAIN DISKIN RECEIVES AWARD

Capt. Herman E. Diskin of the Army Medical Department has been awarded the Legion of Merit for exceptionally meritorious service in combat on Guadalcanal. The award was made by Lieut. Gen. Millard F. Harmon, commander of the army in the South Pacific, on May 11. Captain Diskin, according to the Kalamazoo (Mich.) *Gazette*, together with a noncommissioned officer, made a reconnaissance through an enemy held territory to establish a route of evacuation to casualties of an infantry regiment, which route was a prime factor in the swift evacuation of casualties during a subsequent advance of the regiment. Captain Diskin, who graduated from Wayne University College of Medicine, resides in Detroit and was stationed at Fort Custer, Michigan, from November 1940 to January 1942.

NAVY

MALARIAL CONTROL

The Office of Malaria Control in War Areas reports that Aedes aegypti breeding places at Miami Beach, Fla., where most of the hotels and large apartment houses are taken over by the Army, have been reduced to an all time low.

Comdr. O. J. Brown and Comdr. J. S. Barr, MC, U. S. N., were assigned to represent the Bureau of Medicine and Surgery in a conference with representatives of the Surgeon General of the Army and the U. S. Public Health Service on malaria control.

An engineer from the Office of Malaria Control in War Areas will direct airplane dusting operations to control Anopheles quadrimaculatus breeding in the Potomac River adjacent to war establishments below Washington. An entomologist from this office will coordinate inspection services which will be carried on by the health departments of Virginia, Maryland and the District of Columbia in order to check the effectiveness of the dusting operations.

SURGICAL SUPPLIES AND VICTORY KITS

The Medical and Surgical Relief Committee of America, 420 Lexington Avenue, New York City, recently presented the U. S. S. *Alabama* and the U. S. S. *Mobile* with surgical supplies to help equip battle dressing stations, and through the cooperation of Victory Kits, Inc., 276 victory kits were sent to the U. S. S. *Iowa* and the U. S. S. *Mobile* for distribution to rescued seamen and members of the crew needing them.

CIRCULATING LIBRARY OF MOTION PICTURES

The circulating library of motion pictures referred to in THE JOURNAL, June 5, 1943, page 381, is not intended for civilian use except under special authorized instances. The Bureau of Medicine and Surgery of the Navy in Washington, D. C., has already received a number of requests for these films which cannot be granted. The director of the division of publications of the Bureau of Medicine and Surgery has suggested that civilian individuals and agencies do not request navy medical films.

NAVY DISCONTINUES HOSPITAL FUND DEDUCTION

President Roosevelt has approved the bill H. R. 2584 which abolished on July 1 the 20 cent a month deduction from pay of naval personnel for support of naval hospitals. The full responsibility for supporting the hospitals is placed on the government appropriations, as is the case with army hospitals.

NAVY PERSONALS

Capt. Paul W. Wilson, MC, U.S.N., recently gave a series of lectures at the Mayo Foundation, Rochester, Minn., on tropical diseases.

Lieut. (jg) Harriet J. Davis, W-V(S), U.S.N.R., has reported for duty to the Bureau of Medicine and Surgery and has been assigned to the naval dispensary in Washington.

CIVILIAN DEFENSE

EMERGENCY MEDICAL SERVICE FOR WAR PLANTS

The majority of American war plants are unprepared to provide emergency medical attention for victims of air raid, explosion or other wartime plant disaster, surveys by the Office of Civilian Defense and the U. S. Public Health Service disclose. James M. Landis, director of Civilian Defense, said on June 30 that reports indicate only about one out of five of the larger war plants has made arrangement for hospitalization of war disaster victims and that among smaller plants the proportion is even less. "No one expects industrial plants to provide facilities themselves to care for victims of large scale disasters," Mr. Landis said, "but these facilities can be made available in almost every community, and war plants should set up, before the need for them arises, definite plans and arrangements for providing emergency medical attention for their personnel."

In a study conducted by the U. S. Public Health Service in 1940 it was found that in plants of more than 100 employees only 20.3 per cent of the workers had access to a full time plant physician, 27.6 per cent to a part time plant physician, while 52.1 per cent had none. In plants of less than 100 employees, 94 per cent of the workers had no plant physician service.

"Industrial plants are seldom able to provide hospital care for victims of large scale disasters unless they utilize the facilities of the community," Mr. Landis said, "but all can provide a staff trained and equipped to give efficient first aid to the victims of disasters. As preparation for an emergency, all war plants should make definite arrangements for providing expert medical service for injured personnel by utilizing community medical resources organized under chiefs of Emergency Medical Service of the Office of Civilian Defense. In almost every community in the United States, community medical facilities have been mobilized for war purposes by the Civilian Defense Emergency Medical Service. These facilities will serve the whole community including its war plants, but their effective utilization by industry demands careful advance planning."

Hospital and private ambulances will rarely be adequate to care for the large number of persons who may be injured in a major disaster. In most communities the Emergency Medical Service has made a survey of available ambulances and has arranged to supplement them with converted panel trucks, station wagons and other vehicles in the event of emergency. Industrial plants should provide means of converting some of their own vehicles into ambulances and should plan their disaster operations with the chief of the local Emergency Medical Service so that necessary ambulances can be assigned to them when they are needed, or their own vehicles used elsewhere in case of an emergency that does not involve their own plant.

To care for emergency casualties, hospitals must prepare for them in advance by providing a supply of temporary beds to be set up in corridors and elsewhere, and making other advance arrangements. Industrial plants should know under a prearranged plan worked out with the chief of the Emergency Medical Service what hospitals are to be used for casualties from the plant and how many can be sent to each, thus assuring prompt and adequate attention for those who must be hospitalized. None of these arrangements can be made swiftly after a disaster has struck.

Proper identification of casualties is another thing which must be planned in advance. Official Civilian Defense identification tags and casualty record books are available from the local chief of the Emergency Medical Service. Casualty stations, in which injured may receive preliminary treatment before being discharged or sent to hospitals, should be established both inside and outside the plant.

Another major problem which must be dealt with in advance of any catastrophe is that of admittance of doctors and other members of the Emergency Medical Service to plants. Industrial plants must depend on community facilities for emergency service but, unless arrangements have been made in advance, doctors, ambulance drivers and other workers dispatched by the chief of the Emergency Medical Service or other authorities will be unable to secure entrance into the plants. With the assistance of War Department service commands, Mr. Landis said, personnel of Civilian Defense Emergency Medical Service are being investigated and certified with proper credentials so that they may be admitted to war plants in emergency.

MISCELLANEOUS

NEW PROGRAM TO PROVIDE TRAINING FOR NURSES

THOMAS PARRAN

Surgeon General, U. S. Public Health Service

The Bolton Act, approved on June 15, provides "for the training of nurses for the armed forces, governmental and civilian hospitals, health agencies and war industries, through grants to institutions providing such training, and for other purposes" (Public Law 74). The provisions of this war emergency law should aid to alleviate the serious nursing shortage throughout the country.

The act was drafted with the full cooperation of nurse training institutions, hospitals, the nursing profession and governmental agencies. Need for the measure was emphasized by the Health and Medical Committee, Federal Security Agency, of which Dr. Irvin Abel of Louisville, Ky., is chairman. Representatives of many hospitals and leading hospital associations also have urged that some such program be established by the government. The bill was passed by both houses of the Congress without a dissenting vote, and the Senate Committee on Appropriations has reported favorably on an appropriation sufficient to inaugurate the program. It was hoped that the program could be started on July 1.

A decentralized plan of operation has been established by the U. S. Public Health Service, the agency designated by Congress to administer the act. Training institutions will submit plans meeting the several requirements of the act, and funds will be paid to institutions when plans are approved. Subject only to meeting minimum requirements, full responsibility for carrying out the nurse training program remains as at present, with the training school.

An advisory committee of not less than five members is provided by the act to assist the Surgeon General of the U. S. Public Health Service in formulating rules and regulations to carry out the purposes of the act. The Federal Security Administrator has named nine persons representing "the nursing profession, hospitals and accredited nurses training institutions."

Members of the Advisory Committee are Dr. Oliver C. Carmichael, president of Vanderbilt University, Nashville, Tenn.; James A. Hamilton, director, New Haven Hospital, New Haven, Conn.; Miss Marion Howell, dean, Frances Payne Bolton School of Nursing, Western Reserve University, Cleveland; Sister Helen Jarrell, dean, Loyola University School of Nursing, St. Bernard's Unit, Chicago; Dr. Hyrum Leo Marshall, University of Utah, Salt Lake City; Rev. Fr. Alphonse M. Schwitalla,, dean, St. Louis University School of Medicine, St. Louis; Miss Isabel M. Stewart, director, Division of Nursing Education, Teachers College, Columbia University, New York; Miss Margaret Tracy, director, School of Nursing, University of California, Berkeley; Miss Anna D. Wolf, director, School of Nursing, Johns Hopkins Hospital, Baltimore.

The first meeting of the committee was held in Washington on June 25 and 26 (THE JOURNAL, July 3, p. 683). Regulations growing out of decisions reached at this meeting will be published promptly.

Student nurses who receive training under the Bolton Act will be members of what the Advisory Committee voted to designate "U. S. Cadet Nurse Corps." These students will be provided with tuition, stipends, maintenance, fees, distinctive insignia and uniform, including a street uniform. Graduate nurses taking refresher and postgraduate courses provided by the new act as an extension of the "Training for Nurses" (National Defense) Act now in effect will not wear street uniforms.

The law sets forth rather fully the requirements which must be submitted for approval by the institution wishing to participate in the program. The institution has the choice of two speed-up plans for training, one requiring twenty-four months, the other thirty months.

Stipends to students under both plans will be not less than the following monthly rates: $15 for the first nine months of study, $20 for the following fifteen to twenty-one months of combined study and practice, depending on the curriculum of such institution and $30 for the period following the period of combined study and practice and prior to graduation. The government institutions pay for stipends given students during the first two periods of the course, for maintenance during the first nine months, for uniforms and insignia, and for reasonable tuition and fees throughout the courses of study and training. Institutions pay stipends during the final period of training and provide maintenance after the first nine months.

During the terminal period of training the institution will either afford student nurses under the plan an opportunity to complete their course of training until graduation, paying them a monthly stipend of not less than $30, or transfer the student for training to some other institution if such training may be credited toward graduation. In the latter case the institution to which the student nurse is transferred agrees to pay her a monthly stipend of not less than $30 until graduation.

Funds to institutions will be paid quarterly in advance in the amounts estimated in order to enable institutions to carry out the provisions delegated to them by the act. Subsequent allotments can be increased or decreased, depending on how accurate the initial estimates have proved to be.

In return for learning a lifetime profession without cost to themselves, student nurses who enroll as members of the U. S. Cadet Nurse Corps agree to make their services available to the government or for essential civilian nursing duties for the duration of the war. Any student nurse who has enrolled since Jan. 1, 1941 in a school of nursing participating in the federal plan is eligible to join the corps.

Students who enrolled in the corps ninety days prior to the end of the war will be permitted to complete their training. Thus, members of the corps need not fear that their training will terminate before the course is completed.

The shortage of nurses has reached the danger point. Civilian hospitals are carrying peak loads. Some of them have closed units because they are unable to secure sufficient numbers of nurses. In industrial boom areas, nurses are needed for hospitals, war plants and public health services. Health agencies in all areas report a critical shortage of nurses.

To reach the 1943 goal of 65,000 new student nurses, which is actually somewhat short of the real need, more than 10 per cent of the approximately 600,000 girls graduating from high school each year must be secured.

In the new training program student nurses will be provided with a lifetime profession and at the same time have the satisfaction of gaining recognition for rendering a national war service.

SURGICAL MISSION TO RUSSIA

At the close of the Hunterian Oration before the Royal College of Surgeons of England on May 26 the President, Sir Alfred Webb-Johnson, admitted two new honorary fellows: Col. Elliott C. Cutler, Moseley professor of surgery at Harvard University and chief surgical consultant to the United States Army, and Dr. W. G. Penfield, professor of neurology and neurosurgery at McGill University, Montreal. These two surgeons, with Col. Loyal Davis of the U. S. Army, will be taking part in the forthcoming Anglo-American Surgical Mission to Russia. The British section, which is proceeding under the joint auspices of the British Council and the Medical Research Council, will consist of Surg. Rear Admi. G. Gordon-Taylor, Major Gen. D. C. Monro, professor of military surgery at the R. A. M. College, Milbank, Mr. E. Rock Carling and Mr. R. Watson-Jones. The aims of the mission are to study the results of war surgery in Russia and to explore the possibility of extending medical relationships between the two countries. During the visit to the Soviet Union Surgeon Rear Admiral Gordon-Taylor, the senior vice president of the Royal College of Surgeons, will admit to the honorary fellowship two Russian surgeons: Dr. Nicolai N. Burdenko, director of the Operative Surgery Institute, Moscow University, and surgeon in chief to the Red Army, and Dr. Sergei S. Yudin of the Sklifassovski Hospital for Traumatic Diseases, Moscow.

SOVIET PATRIOTS RESTORING PUBLIC HEALTH SERVICES

GREGORY SHAKHOV

I conversed recently with Nadezhda Demidova, just back from Krasnodar, whither she was delegated by the Council of People's Commissars, Russian Soviet Federated Soviet Republic, to supervise the registration of public health service in liberated territory. She spent three months there.

"Thanks to the united effort of local public health workers," Demidova said, "and extensive cooperation of the local inhabitants, we succeeded in a comparatively short time in eliminating to a considerable extent the consequences of terrific destruction and damage caused by forces of occupation to Soviet public health institutions."

According to data cited by Demidova, as a result of three months' effort the following work was accomplished by the end of April in Krasnodar, where the majority of the medical institutions were depleted, blown up, burned or converted into stables by Germans: One hundred and fifty-four rural, eighteen urban and five children's hospitals received new or restored premises; all rural dispensaries on liberated territory were reopened. Demidova, a veteran worker of the health commissariat, recounted vast damage caused to public health institutions. A new well equipped hospital in the village of Uspenskaya was converted by the Germans into a stable after they robbed it of all equipment. The Gestapo with its terrible torture chambers established headquarters in the Armavir Maternity Home.

Demidova reported a number of facts illustrating the courage and fortitude of Soviet patriots and medical workers, who saved much of the property of health institutions and many buildings. The brave personnel of City Hospital No. 2 in Armavir averted destruction of new buildings of the hospital with its 200 patients, which Germans, retreating under the onslaught of the Red Army, were preparing to blow up. Informed of methods of the Hitlerites, many directors of hospitals, sanatoriums, children's crèches and mother and child health centers took measures to forestall them and save public property. They gave hospital linen, drugs, surgical instruments, cattle and auxiliary farms to their workers for safekeeping. As the Germans were expelled, all property was returned to the institutions despite the fact that receipts had not been given. This, according to Demidova, was done by Dr. Catherine Fedoseyeva, the wife of a colonel of the Russian Army who fought courageously during the first world war. Dr. Fedoseyeva succeeded the chief physician, who left with Red Army units. Despite her 73 years this aged woman doctor at the cost of heroic effort took every precaution to save scores of sick children undergoing treatment in a sanatorium. They were children of local functionaries who joined the Red Army. Learning that the Germans were planning the slaughter of innocent children, the doctor resorted to a ruse. She destroyed the record cards, isolated the children in a special ward, and when the Gestapo agents called they were told that this was the ward for infectious diseases.

When the Germans entered, Dr. Fedoseyeva called on some members of her staff to help preserve supplies of linen, instruments, drugs and cattle. Thus she saved fifteen cows.

The people of the village of Labinskaya tell with pride about the chief doctor of the local hospital, Maria Dyakova, who, risking her life, saved 250 Soviet citizens doomed by Germans to death. Numerous examples, said Demidova, can be cited of equal courage among Soviet health workers in Krasnodar.

After the German retreat these patriots set to work with redoubled energy to restore the health services. They were short of linen, instruments, furniture and equipment for hospitals and children's institutions. Active groups left in towns organized a collection of these articles from the population. Simultaneously hygiene inspectors made rounds of all homes to see if there were any sick. A number of cities—Armavir, Krasnodar, Kropotkin, Maikop, Labinskaya—were infected with typhus and other diseases. Provision of hospital accommodations for all sick, energetic work of antiepidemic squads sent to the center for reopening of dispensaries, polyclinics of hygiene and antiepidemic centers, bath houses and laundries, combined with a number of prophylactic measures, brought desired results. Already in April there were no epidemics, which had been widespread during the German occupation.

MEDICAL AND SURGICAL RELIEF COMMITTEE

The St. Paul chapter of the Medical and Surgical Relief Committee of America recently shipped by diplomatic pouch to the Soviet Red Cross 8,000 sulfaguanidine and 9,000 sulfathiazole tablets.

Five emergency medical kits for ambulances, a complete operating set, an x-ray unit and a fluoroscope were recently shipped by the Medical and Surgical Relief Committee of America to the French Red Cross for distribution to French hospitals in the North African area.

The committee has been requested to send to China a portable x-ray set complete with generators and photoroentgenographic unit to combat tuberculosis among the Chinese soldiers. There is no special hospital for tuberculous soldiers in all of China, according to Col. Wesley K. C. May of the New Life Movement in China.

The headquarters of the Medical and Surgical Relief Committee of America are at 420 Lexington Avenue, New York City. Among the many volunteers and contributors recently listed by the committee are the Doctors' Aid Corps, Atlanta, Ga., and the Woman's Auxiliary to the Georgia Medical Association, to the Hennepin County Medical Society, Minneapolis, to the North Carolina State Medical Association, to the New Hampshire State Medical Society, to the Medical Society of the State of New York and to the West Virginia Medical Association.

THE "BLITZ" ON GUY'S HOSPITAL

Abstract of an article by P. M. F. Bishop, Deputy Superintendent, Guy's Hospital, London, published in Guy's Hospital Gazette, March 20, 1943.

On Sept. 15, 1940, early in the battle of London, a bomb crashed through the dome of Hunt's House. The great staircase beneath was demolished. The only casualty was a medical officer who, concussed and bleeding from a badly lacerated scalp, had to be lowered from a fourth floor window down a fireman's ladder. Sixty patients were rescued from the first and second floor wards by the fire escape. From that day on for many months access to about two hundred and fifty beds was denied us and for more than a year after the staircase had been partially restored every patient and all the paraphernalia of the wards had to be carried up and down it until one of the lifts could be repaired.

Guy's passed through the night of the great fire not wholly unscathed. Though it was left standing, the flames could not be prevented from setting fire to the residential college and to the high voltage x-ray department at the top of the already bomb-shattered Hunt's House. Moreover, of three of the few high explosives that fell in London that night, one did irreparable damage to the surgical block; another, by bursting in a subway, reproduced many of the curious phenomena resulting from blast in a confined space; and the third smashed scores of windows in that glass house, the dental department. Fortunately, once again there were only minor casualties. All the patients had to be evacuated by ambulance to the country; and, finally, all of the staff but twenty and some of the more valuable and portable pieces of equipment were removed to places of comparative safety. Thus for the first time in its history Guy's closed its gates to the sick for a few brief hours. Next morning, however, the dauntless outpatient could be seen pick-

ing his way through the débris to consult his doctor. The night had brought excitement, danger and damage but also miraculous escape, and in the aftermath came an expression of friendship in need, for the high voltage x-ray plant was replaced from across the Atlantic and installed in the Guy's U. S. Army hospital at Seal.

On the third historic night of April 16 a canister of incendiaries emptied its bombs over the hospital. Everything that could be moved was taken out of the burning building. Portraits of eminent ancestors were torn from the walls of the fine eighteenth century mahogany staircase, chairs and tables carried from the governors' committee room, personal belongings rescued from the superintendent's house, files and records taken from the counting house and x-ray equipment was gently disentangled from the surgical radiology department until at last there was nothing more to be done.

Guy's admitted many air raid casualties. Except for a few scattered makeshift wards, such as the hall of the massage department, the unbombed wing of an L shaped ward in the surgical block, and later the basement of the new York psychiatric clinic, the use of which was made necessary by the demolition of the staircase of Hunt's House, all patients, both civilian sick and air raid casualties, were accommodated in one block. In this same building casualties were received, resuscitation was undertaken and in its emergency underground theaters operations were performed.

Cases are received by a student "ambulance teller," who checks the number of stretchers and blankets brought in from each ambulance and enters into his record the Guy's serial number of each casualty and the site of the incident which the ambulance has attended. He issues to each casualty an M. P. C. 47 envelop in which all the case reports are collected and finally dispatched to the Ministry of Pensions Records Office. On this envelop the Guy's serial number has previously been inscribed. His colleague replaces from stock to each ambulance attendant the number of stretchers and blankets brought in with the casualties. In the reception hall the casualty is inspected by the reception officer and his staff of house officers, students, sisters and nurses, and is at the same time interrogated by the almoner with regard to name, address and next of kin. Routine antitetanus serum is given at this stage, but otherwise the patient is disturbed as little as possible except to insure that hemorrhage is controlled and fractures immobilized. Relatives or police are directed to the almoner's office. Relatives and friends are offered a "shakedown" for the night until the "all clear" sounds.

The casualty passes quickly to the resuscitation ward, where he is given reassurance, warmth, morphine if necessary and a cup of tea and a cigaret unless an abdominal injury is suspected. At regular intervals the pulse rate and blood pressure are recorded. In more serious cases, unless these become steady and the color improves in about half an hour, a transfusion is given—of blood if the loss of it is evident or surmised, otherwise of plasma. In the early days too many patients were transfused and too much blood was given. More than 2 pints seldom diminishes the operative risks further. Within half an hour or so of the admission of a batch of casualties the surgical officer in command with one or two ward clerks to take notes proceeds quietly on a round of assessment. Patients are disturbed as little and as infrequently as possible and an atmosphere of bustle is discouraged. Clothes are loosened only to give access for adequate examination of injured parts. Fitness for operation is judged on improved color, steady pulse and a systolic blood pressure maintained at about 100 mm. for half an hour. Resuscitation is required in the majority of cases only for two to six hours before operation is embarked upon. The surgical officer in command arranges and writes up on the blackboard an order of operations. He seldom operates himself.

Of casualties admitted, from 40 to 50 per cent come to operation. The average time required for each operation is about an hour, which includes undressing the patient under the anesthetic and washing off the ingrained dust of collapsed buildings. In eight hours 30 to 40 cases can be dealt with by four surgical teams. To work longer than this without relief is to lose efficiency. To delay operations beyond this time is to run increasing risks of sepsis. Thus more than 75 casualties should not be admitted by a hospital disposing of four surgical teams.

The quality of the anesthetic will in some cases determine life or death of the patient. General anesthesia is the rule. Induced by small doses of pentothal sodium, it is maintained by gas, oxygen and minimal quantities of ether. With a low blood pressure spinal anesthesia is dangerous, and local anesthetics are not suitable for gross wounds and multiple injuries.

Soft tissue wounds are treated certainly within twelve hours, mostly within eight. Careful excision followed by packing is preferred to primary suture, which is rarely performed. Distal limb wounds are immobilized in plaster, but shoulder and hip spicas are found too time consuming. Multiple wounds from glass injuries, of which there were a surprisingly large number, are usually dealt with by multiple operators.

Experience underlined two important general principles: speed in operating, often achieved by two surgeons working simultaneously on 1 case, and minimal blood loss with immediate replacement by drip transfusion in the theater or on returning to the ward.

By noon on the following day about two thirds of the night's casualties were evacuated to base hospitals. Cases retained included postoperative abdominal and chest injuries, certain cases of fractured ribs and blast injuries, all severe head injuries, cases in plaster with a precarious peripheral circulation, fractures in extension with blood supply or adequate immobilization in doubt (these cases were often transferred to a Balkan beam, and it was found that, on the whole, fractured femurs did not take kindly to an early second move); and amputations and gross multiple injuries in poor condition.

Less interference in the reception hall, fewer transfusions, less blood, bed rest, dimmed lights, warmth, reassurance, a cup of tea and a cigaret became the rule for the patients; less bustle, less rigid assignment of duties, less issuing of orders, more reliance on "blitz" matured common sense and individual initiative became the practice for the staff. We worked as a team, not as a platoon.

PUBLIC HEALTH UNDER HITLER

NPD, Germany, April 1, states that apart from military and economic problems a host of medical and above all hygienic questions have been raised as the result of the occupation of the vast eastern territories by the German armed forces. Whether the soldier penetrates into a region in order to conquer it or whether he wins a battle there and passes through it, he will always come in close contact with the life of the soil, with its plants, animals and human beings. He cannot avoid this contact even during the most violent fighting, but even less when he is deploying in the terrain preparatory to battle or occupying it after a victorious fight. According to the nature of the subsoil, the soldier enters a "health area" or a "disease area."

According to Transocean, France, of March 23, in order to neutralize the effect of the Anglo-American blockade on the health of the French people a number of factories have been opened with the approval of the government. These are, in the first instance, manufacturing vitamins for children and aged people. Vitamin A, for instance, is manufactured on a large scale at Marseilles from fish liver. The distribution of vitamin is in the hands of the Secours national.

A private informant of *Svenska Dagbladet* of March 24 reports that epidemics are again raging in the Baltic countries. Starving wild dogs come to the Baltic countries from occupied Russia and spread disease, often attacking people. Typhus, which was never properly mastered in many Ostland districts, is again raging violently. Delousing must be strictly observed by travelers, and before crossing Germany's frontier a repeated medical examination is required.

According to the press in Riga, foot and mouth disease is raging around Riga, presumably spread by infected hay imported from the Ukraine.

ORGANIZATION SECTION

OFFICIAL NOTES

ELECTRICALLY TRANSCRIBED RADIO HEALTH PROGRAMS

The Bureau of Health Education announces the first two series of electrically transcribed radio health programs for use of state and county medical societies, as authorized by the Board of Trustees of the American Medical Association.

Two sets of transcriptions are ready for local use. They are as follows:

(*a*) "American Medicine Serves the World at War." This is a series of six programs with the following titles and broadcasters, each broadcast being in interview form, the physician being interviewed by Harriet Hester.

"Health and Sanitation Problems in Newly Established Wartime Communities" by H. H. Shoulders, M.D.
"The Treatment of War Casualties" by Rear Admiral Harold W. Smith.
"Surgical Progress in Wartime" by Edward J. McCormick, M.D.
"Medicine and Public Health in Hawaii at War" by Forrest J. Pinkerton, M.D.
"Civilian Medical Care in Time of War" by Edward H. Cary, M.D.
"Public Health Programs in Wartime" by Warren F. Draper, M.D.

(*b*) "Before the Doctor Comes," a series of sixteen radio broadcasts in which Drs. Austin E. Smith, Edwin P. Jordan and W. W. Bauer are interviewed by Harriet Hester or June Merrill on the following topics:

1. "The Child With Sniffles—The Child With a Sore Throat."
2. "The Child With a Cough."
3. "The Child With Fever."
4. "The Child With Rash."
5. "The Use and Misuse of Prescriptions."
6. "Dangerous Drugs in the Home."
7. "The Child With Headache."
8. "The Child With 'Tummy-Ache'."
9. "The Child With Ear-Ache."
10. "What to Do About Cuts and Scratches."
11. "What to Do About Bad Bumps."
12. "The Listless or Irritable Child."
13. "Growing Pains—Nervous Habits."
14. "What to Do About Bleeding."
15. "What to Do About Foreign Bodies in the Nose, Ears, Throats or Eyes."
16. "Immunization."

These transcribed programs can be borrowed by the county medical societies or state medical societies *in complete sets only*, if they will make the necessary arrangements with the local radio station. The series "American Medicine Serves the World at War" requires no local participation, since each broadcast is a complete interview recording. The series "Before the Doctor Comes" can be used without local participation in ten minutes of radio time or with local participation in fifteen minutes; in the latter instance full instructions accompany each set of records. There will be no charge for any local use of these records, but groups not of the medical profession must be authorized by the local medical society to use the transcriptions. The only cost to local groups will be a nominal charge ranging from 50 cents to $1.50, depending on distance from Chicago, for return express charges. It is necessary for a successful carrying through of transcription loan projects that loan sets be returned promptly.

Reservations for use of these transcriptions may be filed with the Bureau of Health Education at once specifying date desired. Ten sets of each series are available and will be lent in the order in which reservations are received.

W. W. BAUER.

SUMMER HEALTH HINTS

The next three programs for the series of broadcasts over WLS on Thursdays at 2:45 p. m. under the title "Summer Health Hints" will be as follows:

July 15. "Poison Oak or Ivy."
July 22. "Keeping Cool."
July 29. "Light Summer Meals."

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—H. R. 2935 has passed the House and Senate, making appropriations for the Department of Labor, the Federal Security Agency, and related independent agencies, for the fiscal year ending June 30, 1944. In the Senate the proviso was eliminated prohibiting the use of any appropriation for the Children's Bureau for the promulgation or carrying out of any instruction, order or regulation relating to the care of obstetric cases which discriminates between persons licensed under state law to practice obstetrics. The bill then went to conference and the conferees agreed to reinsert the proviso with the following addition: *"Provided further,* that the foregoing proviso shall not be so construed as to prevent any patient from having the services of any practitioner of her own choice paid for out of this fund so long as state laws are complied with." Thereafter the House of Representatives, by a vote of 212 to 152, acquiesced in the recommendation of the conference committee. The Senate likewise agreed to the recommendation of the conference committee. The bill, therefore, needs only the approval of the President to become a law and will contain the two provisos recommended by the conference committee. H. R. 2996 has passed the House and Senate and awaits the approval of the President, making appropriations for the military establishment for the fiscal year ending June 30, 1944. As passed by the House this bill provided that no appropriation contained in it "shall be available for any expense incident to educating persons in medicine (including veterinary) or dentistry whose instruction in degree-granting colleges or universities as students in such professions cannot be completed in two years or who are not enlisted in the Army of the United States." In the Senate this proviso was deleted from the bill, and the House thereafter concurred in the action taken by the Senate. S. 1130 has passed the Senate, providing for the care of children of mothers employed in war areas.

STATE MEDICAL LEGISLATION

Illinois

Bill Passed.—H. 802 passed the senate, June 30. It proposes to amend the medical practice act by providing that the entry of a decree by any court of competent jurisdiction establishing the insanity of any person holding a license to practice medicine shall operate as a suspension of such license until such time as a committee of physicians shall find that the licensee has been restored to sanity.

Bill Enacted.—S. 167 was approved, June 25. It provides for the creation of a state board of health to take over the duties of the department of public health.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Nutrition Clinic Study.—The National Research Council recently sponsored the visit of a group of scientists to the Nutrition Clinic at the Hillman Hospital, Birmingham, to study the work of Dr. Tom D. Spies with a view to determining the possibility of extending corn meal to meet special nutritional needs of the South. The visit was said to be financed by private contributions and the research council. Among the group were Dr. Russell M. Wilder, Washington, D. C.; Dr. William H. Sebrell Jr., Bethesda, Md.; Robert F. Griggs, Ph.D., Elmer M. Nelson and Frank L. Gunderson, Ph.D., Washington; Charles G. King, Ph.D., and Robert R. Williams, Ph.D., New York, and Dr. James S. McLester, Birmingham.

CALIFORNIA

Investigation of Encephalitis.—The Weekly Bulletin of the California State Department of Public Health reported that a number of cases of encephalitis in several counties were investigated during April. The ages of the patients ranged from 2½ months to 49 years. Laboratory reports indicated that 1 case was of the severe St. Louis type of encephalitis.

Women's Court Created for Sex Offenders.—The San Francisco City Separate Women's Court has been established in the Health Center Building, 135 Polk Street, San Francisco, to meet the problem of the professional prostitute streetwalker and other sexually promiscuous women who are arrested by the police department. Prior to the opening of the Separate Women's Court, these women were housed in the women's section of the San Francisco City Prison. During their confinement first offenders were placed with habitués and frequently with other criminals, thus affording an excellent opportunity for promoting the maladjustment of the first offender. The objective of the new court is to assist in the segregation of the various cases referred by the police department on the basis of a previous history of sex offenses. First offenders are separated from habitués and criminal cases. The objectives in the Separate Women's Court are to render an entirely individualized case study plan. Every effort is made to provide means for adequate referral of those first offenders who present a potentiality of reeducation and readjustment. Detailed case study work is done by three social service workers assigned to the court. Assembled data are referred to the presiding judge with recommendations for disposition of the case so as best to serve the interests of society and the individual. Persons who present no potentiality are subjected to prolonged confinement in accordance with the provisions of the law dealing with prostitution. Individual quarters are provided for each case under custody of the Separate Women's Court and the cases are held under observational quarantine by the health department for seventy-two hours. During the quarantine medical examination is provided by the health department and a complete social case history is secured by the social workers. If the woman is found to be infected she is referred to the health department quarantine treatment clinic and held under custody of the sheriff's department. If not infected the woman is released from quarantine and a disposition made by the judge of the Separate Women's Court. The personnel of the Separate Women's Court consists of a judge, a medical coordinator, a deputy district attorney, a woman physician, a registered nurse, three social workers, four police matrons, one court reporter, one court clerk, a bailiff and two general clerk stenographers. Dr. Richard A. Koch, San Francisco, chief of the division of venereal diseases of the department of health, is medical coordinator. Judge Clarence Morris is the presiding judge in the court.

IDAHO

Personal.—Dr. Alan L. Hart, Boise, consultant in tuberculosis for the state department of public health and the Idaho Tuberculosis Association, has been granted a leave of absence by the state department to accept a temporary assignment as roentgenologist at the induction center for the armed forces in Seattle.—Dr. Charles Sanford Allen, Boise, was recently appointed medical superintendent of the Nampa State School and Colony, succeeding Dr. Charles R. Lowe, Nampa.—Dr. Paul R. Ensign has resigned as director of the city and county health unit in Boise to accept a position as pediatric consultant of the division of maternal and child health of the Georgia Department of Public Health.

ILLINOIS

New Director of Maternal and Child Hygiene.—Dr. Hugo V. Hullerman, deputy commissioner of health and director of maternal child health of the Peoria City Department of Health (THE JOURNAL, July 11, 1942, p. 892), has been appointed chief of the division of maternal and child hygiene of the Illinois Department of Public Health. He succeeds Dr. Fred L. Adair, who was recently called to Washington, D. C., to become chief of the division of medical needs of the civilian food requirements branch of the Food Distribution Administration of the U. S. Department of Agriculture. Dr. Adair had served as chief of the state division since March 1, 1942 (THE JOURNAL, March 14, 1942, p. 907). Dr. Hullerman had been chief of the state division of local health administration when he joined the Peoria department of health.

Chicago

Courses on Electrocardiography.—The cardiovascular department of Michael Reese Hospital announces a course on electrocardiography to be held August 16-28 under the direction of Dr. Louis N. Katz, director of cardiovascular research. Designed for the general practitioner, emphasis will be placed on chest leads and on the importance of the electrocardiogram in coronary sclerosis and myocardial infarction. Additional information may be obtained from the Michael Reese Hospital.

Dr. Victor Johnson Joins American Medical Association.—Dr. Victor Johnson, associate professor of physiology and dean of students in the division of biological sciences, University of Chicago, on July 1 became secretary of the Council on Medical Education and Hospitals of the American Medical Association. Dr. Basil C. H. Harvey, who retired in September 1940 after thirty-eight years as a member of the faculty of the university, will return to active duty as acting dean. He had been dean of students in the division from its establishment in 1931 and dean of medical students since 1923. Dr. Johnson graduated at the University of Chicago School of Medicine in 1939 and has been a member of the physiology department since 1929. He is co-author with Anton J. Carlson, Ph.D., of "Machinery of the Body."

LOUISIANA

State Medical Election.—Dr. Valentine H. Fuchs, New Orleans, was chosen president-elect of the Louisiana State Medical Society at its meeting on May 3 and Dr. Charles C. De Gravelles, New Iberia, was installed as president. Dr. Paul T. Talbot, New Orleans, is secretary-treasurer. The next annual session will be held at New Orleans, April 24-27, 1944.

Personal.—Dr. Richard O. C. Green, Alexandria, formerly director of the Rapides Parish Health Unit, has been named to a similar position with the Webster Parish Health Unit, succeeding Dr. Edmond G. Klamke, Minden.—Dr. George W. Gaines, Tallulah, was presented with a certificate of fifty years in the Masonic Lodge by the Grand Lodge of Louisiana and a pin for fifty years' service.

MICHIGAN

Recommend Increase in Dues to State Society.—At a special meeting of the Saginaw County Medical Society recently a resolution was adopted recommending that the dues of the state medical society be increased up to a maximum of $50 a year. It was stated that the increase would be "sufficient to provide additional facilities and services requisite to the well-being of the medical profession of Michigan which cannot be supplied on the present inadequate dues." The state society dues are now $12 a year.

Health Program for Imported Jamaicans.—The county health department in cooperation with the Saginaw County Medical Society and the state department of health have initiated a concentrated program to prevent the spread of contagious diseases suspected among the Jamaicans who were imported to work in the sugar beet fields, newspapers reported June 11. Under a four point program the group will be given x-ray examinations and blood tests in an effort to check tuberculosis and venereal diseases, and stool specimens will be analyzed to detect typhoid and dysentery. It was pointed out that the housing situation is satisfactory because of the new houses at Prairie Farm. A large number of persons, however, are living in houses which are absolutely below standard, it was stated.

MINNESOTA

State Medical Election.—Dr. Elmer M. Jones, St. Paul, was elected president of the Minnesota State Medical Association at its annual meeting, May 17, and Drs. Richard R. Cranmer, Minneapolis, and Melvin S. Nelson, Granite Falls, vice presidents. Dr. William H. Condit, Minneapolis, is treasurer, and Dr. Benjamin B. Souster, St. Paul, secretary. The annual meeting in 1944 will be held in Rochester at a time to be designated by the council.

Personal.—Reginald C. Sherwood, Ph.D., St. Paul, food chemist, has been appointed by Dr. Russell M. Wilder as his assistant chief in the civilian food requirements branch of the food distribution administration at the Department of Agriculture in Washington, D. C., according to the *Journal-Lancet*. —Dr. Henry Hutchinson, Moose Lake, assistant superintendent of Moose Lake State Hospital for the last five years, has been appointed superintendent of the Hastings State Hospital, Hastings.

NEW JERSEY

Bank Names Room in Honor of Physician.—On May 25 "The McBride Room" in the Paterson Savings Institution was dedicated to Dr. Andrew F. McBride Sr., chairman of the board of the bank. A feature of the occasion was the unveiling of an oil portrait of Dr. McBride, painted by James McBey. The new room not only is to be used by the personnel of the bank but will be available for public meetings of a civic, cultural and patriotic nature, according to the state medical journal. Among the speakers were the Rt. Rev. Msgr. L. A. McBride, brother of the physician; C. Kenneth Fuller, president of the bank, Dr. Francis H. Todd and Dr. McBride. The physician is a past president of the Passaic County Medical Society, trustee of the Medical Society of New Jersey, and in 1929 was president. He is also a member of the House of Delegates of the American Medical Association.

NEW YORK

Symposium on Wartime Nutrition.—A group of health agencies sponsored a symposium on wartime nutrition at the Hotel Statler, Buffalo, June 24. Among the speakers were Drs. Edgar C. Beck, Buffalo, on "The Normal Diet"; Donovan J. McCune, New York, "The Basic Principles of Diet in the Treatment of Disease"; Fred L. Adair, Washington, D. C., "The Use and Abuse of Vitamins in Therapy"; William W. Bauer, director, Bureau of Health Education, American Medical Association, Chicago, "Food and the Future."

New York City

Exhibit on Occupational Therapy—"Occupational Therapy; Its Function and Purpose" is the theme of an exhibit at the Museum of Modern Art. The exhibition, which opened on June 1 and will continue throughout the summer, is sponsored by the American Occupational Therapy Association.

Dr. Rhoads on Leave as Director of Memorial Hospital.—Dr. Cornelius P. Rhoads, director of Memorial Hospital for the Treatment of Cancer and Allied Diseases, has been given a leave of absence to become chief of the Medical Division of the Chemical Warfare Service of the U. S. Army, *Science* reports. He will have the rank of colonel. Dr. Fred W. Stewart, pathologist at the hospital, has been named acting director and Dr. Howard C. Taylor Jr. assistant.

Workmen's Compensation Investigation.—Dr. Theodore R. Freedman, Brooklyn, has been restrained from treating workmen's compensation claimants pending the outcome of an indictment for larceny in connection with padding bills for treating these patients, according to the New York *Times*. The action was taken after the physician had admitted "he padded his bills, bribed state employees, exaggerated treatment and participated in the splitting or refunding of fees; also solicitation of business and corrupt practices with a licensed representative to whom he paid substantial kickbacks." Dr. Freedman was awaiting trial in General Sessions on the larceny indictment, the *Times* stated.

OKLAHOMA

State Medical Election.—Dr. Charles R. Rountree, Oklahoma City, was chosen president-elect of the Oklahoma State Medical Association at its annual meeting, May 11, and Dr. James Stevenson, Tulsa, was inducted into the presidency. Dr. James G. Edwards, Okmulgee, is vice president and Dr. Lewis J. Moorman, Oklahoma City, secretary. The next annual session will be held at Tulsa in 1944.

Dr. John Cowan Named Venereal Disease Officer.—Dr. John A. Cowan, health officer of Sioux City, Iowa, has been appointed venereal disease officer for the Oklahoma State Department of Public Health, succeeding Eugene A. Gillis, passed assistant surgeon, U. S. Public Health Service, who has held the position for four years on loan from the public health service. Dr. Gillis is being transferred to Austin, Texas.

OREGON

Changes in Bureau of Industrial Health.—Thomas F. Mancuso, assistant surgeon, U. S. Public Health Service, reserve, who has been on assignment to the Michigan Department of Health, has been named to succeed Harold T. Castberg, passed assistant surgeon, U. S. Public Health Service, who has been organizing the Oregon state industrial hygiene division. Dr. Castberg has been assigned to the California Bureau of Industrial Health, of which he formerly served as acting chief.

SOUTH CAROLINA

Special Society Election.—Dr. Vivian P. Patterson, Pryor Hospital, Chester, was chosen president-elect of the South Carolina Hospital Association at its annual meeting in Columbia on May 26. Other officers include Mr. Jacque B. Norman, Spartanburg, president; Miss Katharine O. Altman, R.N., Lancaster; Mrs. Eula B. Lamar, R.N., Aiken, and Mr. George W. Holman, Rock Hill, vice presidents, and Mr. R. L. Dougherty, Columbia, secretary-treasurer.

Committee to Investigate Medical Education and Services.—Gov. Olin D. Johnston, Columbia, recently appointed Senator O. T. Wallace, Charleston, to a seven man committee created by the general assembly to "investigate medical education and medical services in South Carolina." Two other members of the committee, which was given a thousand dollars for expenses, were named by the senate, two by the house of representatives and two by the president of the South Carolina Medical Association. The committee has been directed to submit its report on or before January 1.

UTAH

Activities at University of Utah.—Recent appointments at the University of Utah School of Medicine, Salt Lake City, include that of Dr. Fuller B. Bailey as acting professor of internal medicine. The executive committee of the recently appointed school staff now include Dr. Bailey and Drs. Philip B. Price, professor of surgery; A. Louis Dippel, professor of obstetrics and gynecology, and John A. Anderson, professor of pediatrics. According to an announcement the medical school, which was recently augmented to include four years' instruction, is now operating in a satisfactory manner. The main portion of the teaching in the clinical years is being done at the Salt Lake County General Hospital, which before the teaching program began had about 250 beds. Additional space has now been taken in the infirmary building, and the capacity will soon be increased an additional 100 beds. The pediatrics department will be moved from the present hospital and will occupy the first floor of the infirmary building, providing a pediatric division of about 60 beds. Medicine will be moved to the second and third floors of the west wing of the infirmary, providing for about 80 straight medical beds and leaving room for considerable expansion for surgery and gynecology in the present hospital building. A clinical amphitheater is about to be constructed, and money has been approved to enlarge materially the laboratories and the surgical operating rooms and accessory rooms. Quarters have been provided for student laboratories and for a students' lounge or rest room where they may study. In addition an adequate library and reading room will be installed in the hospital. An admission center with a casualty ward is being developed on the first floor wing of the hospital near the ambulance entrance, making the admitting station more convenient than has heretofore been the case. The administrative portion of the hospital will be placed entirely in the center section of the main floor. A new isolation hospital is to be constructed with federal funds. Clinical pathologic conferences are held once a week for one hour on Friday afternoons, and in addition once every two weeks a clinical pathologic conference is held for physicians of the community at which they are requested to present pathologic material and case histories for discussion. The fourth year, which is not yet operative, contemplates eighteen weeks of election. There is a department of industrial health. Teaching and tropical medicine will be available, and the medical school has been approved for medical teaching under the specialized training programs of the army and navy.

VIRGINIA

Physician Fined for Income Tax Evasion.—*Southern Medicine and Surgery* reports that Dr. James W. Tipton of Danville was fined $20,000 by Judge Robert N. Pollard in Federal District Court, May 27, on six charges of income tax evasion. The physician was said to have pleaded nolo contendere to an indictment listing six charges of evading income taxes from 1936 through 1941, during which period Lester L. Furr, special agent of the internal revenue department, testified he filed improper returns and paid $1,373.92, when his total liability to the government was $22,490.99. The medical journal reported that the defense presented no oral argument but requested that a prison sentence be not imposed. Maximum penalty for each of the six counts is $10,000 fine and five years' imprisonment. Under the law, in addition to the $20,000 fine, the physician must pay back income taxes amounting to $27,373.15, plus penalty and interest, which will bring his tax liability to well over $52,000, it was stated.

Past Presidents' Night.—The Richmond Academy of Medicine designated its meeting of May 25 as "past presidents' night." There have been fifty-four presidents of the academy since 1890. Dr. Arthur S. Brinkley is now president and other living past presidents, all of Richmond, are:

Dr. Stuart McGuire
Dr. William F. Mercer
Dr. Ramon D. Garcin
Dr. Charles R. Robins
Dr. John Shelton Horsley
Dr. Alexander G. Brown Jr.
Dr. William Lowndes Peple
Dr. Thomas W. Murrell
Dr. James K. Hall
Dr. Frederick M. Hodges
Dr. Claude C. Coleman
Dr. Stuart N. Michaux
Dr. James H. Smith
Dr. Wyndham B. Blanton
Dr. William H. Higgins
Dr. James Morrison Hutcheson
Dr. Robert Finley Gayle Jr.
Dr. Carrington Williams
Dr. Frederick P. Fletcher
Dr. Roshier W. Miller
Dr. Marvin Pierce Rucker
Dr. Austin I. Dodson
Dr. John Powell Williams
Dr. William Branch Porter
Dr. Beverley R. Tucker

Five of this group were not present at the special meeting: Dr. McGuire, Dr. Blanton, Dr. Hutcheson, Dr. Tucker and Dr. Williams, who is in North Africa.

WEST VIRGINIA

Committee to Study By-Laws.—Dr. Robert J. Wilkinson, Huntington, president of the West Virginia State Medical Association, has appointed a special committee to submit a report to the council on the revision of the constitution and by-laws. The committee is composed of Drs. James Howard Anderson, Hemphill, chairman; Frank C. Hodges, Huntington, and James L. Wade, Parkersburg.

Honorary Life Members.—At the recent meeting of the West Virginia State Medical Association the following physicians were made honorary life members: Drs. Wessie P. King and George Snyder, Weston; Albert L. Amick, Charleston; John H. Hansford, Pratt; William A. McMillan, Charleston; William C. Camp, Spencer; J. Riley McCollum, St. Marys; Edwin W. Crooks, Roy Benson Miller, Lonzo O. Rose and Elbert L. Wright, all of Parkersburg; Jesse S. Maloy, Shinnston, and Martin F. Wright, Burlington.

GENERAL

Bibliography on Blood and Plasma Storage and Transfusion.—The General Electric Company, 5 Lawrence Street, Bloomfield, N. J., has made available a complete bibliography of articles and publications dealing with the storage and transfusion of blood and plasma. The company announces that it will mail copies of this material to any physician who is especially interested in the subject.

Specialty Board Examinations.—The American Board of Internal Medicine will hold regional oral examinations in New Orleans, August 10-11. Oral examinations in the subspecialties will be included. Requests for admission should be filed with Dr. William A. Werrell, assistant secretary-treasurer, American Board of Internal Medicine, 1301 University Avenue, Madison, Wis.——The American Board of Otolaryngology will hold its next examination in Chicago, October 6-9, at the Palmer House and the Illinois Research Hospital. Dr. Dean M. Lierle, University Hospitals, Iowa City, is the secretary-treasurer of the board.

Grants for Infantile Paralysis Study.—Twenty-eight grants totaling $354,370 have been made by the National Foundation for Infantile Paralysis to universities, hospitals, laboratories and other organizations in eleven states to continue the fight against the disease. Sixteen grants, totaling $216,020, were made for virus and after-effects research. Four of these are on long-term projects being conducted at Yale University, New Haven, Conn., Johns Hopkins University, Baltimore, the University of Michigan, Ann Arbor, and the University of Wisconsin, Madison. Twelve grants, totaling $138,350, were made for various educational programs including the training of technicians in the Kenny method of treatment. Some of these grants include projects for educational work for physicians and the public. The sum of $2,500 was appropriated for the preparation of a complete bibliography on poliomyelitis. The compilation is being done for the foundation with the aid of the library of the American Medical Association and the John Crerar Library, both in Chicago. The money will be disbursed in California, Connecticut, Georgia, Illinois, Iowa, Maryland, Massachusetts, Michigan, New York, Pennsylvania and Wisconsin.

Special Society Elections.—Dr. Frank W. Konzelmann, Wilmington, Del., was chosen president-elect of the American Society of Clinical Pathologists at its annual meeting in Chicago in June and Dr. Walter S. Thomas, Rochester, N. Y., was inducted into the presidency. Dr. Josiah J. Moore, Chicago, is vice president. The Board of Registry of Medical Technologists consists of Drs. Lall G. Montgomery, Muncie, Ind., Israel Davidsohn, Chicago, and Ralph G. Stillman, New York. During the meeting the society presented the following awards: The Ward Burdick Award (THE JOURNAL, May 22, p. 245) was given to Dr. Max M. Strumia, Bryn Mawr, Pa., for his work on blood plasma, the gold medal for excellence in scientific exhibit to Dr. Davidsohn for his exhibit on blood groups, the silver medal for excellence in scientific exhibit to Drs. Samuel A. Goldberg, Newark, N. J., Solon N. Blackberg Chicago, and Percy de Stanley, Union, N. J., for their exhibit on the pathology of arthritis, and the bronze medal for excellence in scientific exhibit to Dr. Sylvester E. Gould, Eloise, Mich., for his exhibit on pathology of trichinosis.——Dr. Herman C. Pitts, Providence, R. I., was recently reelected president of the American Society for the Control of Cancer at its annual meeting in New York. Other officers reelected include Dr. John J. Morton Jr., Rochester, N. Y., and Dr. Frank E. Adair, New York, vice presidents; Dr. Cornelius P. Rhoads, New York, secretary, and James H. Ripley, treasurer.——Dr. E. Arthur Whitney, Elwyn, Pa., was chosen president-elect of the American Association on Mental Deficiency at its annual meeting, May 16, and Dr. Charles Stanley Raymond, Wrentham, Mass., was installed as president. Dr. Neil A. Dayton, Mansfield Depot, Conn., is the secretary.

Wartime Trends in Tuberculosis.—There is no evidence from insurance figures that the increased employment of women in industry since the outbreak of the war has adversely affected their tuberculosis death rate, according to the *Statistical Bulletin* of the Metropolitan Life Insurance Company. Longer hours of work, crowded living conditions in war production centers and curtailed food supplies have thus far not interrupted the longtime downward trend of the disease, it was stated. In 1942 the tuberculosis death rate among Metropolitan industrial policyholders was 5 per cent lower than the average for the prewar period 1939-1941. Moreover, during the first four months of the current year, a period of peak industrial activity, the mortality was 5.5 per cent less than for the similar period of 1942. It is an arresting fact that each month since Pearl Harbor, except one, has registered a lower death rate for tuberculosis than the corresponding month in the prewar period. The bulletin stated that for the general population complete data for 1942 are not yet available, but preliminary figures indicate a similar downward trend. Figures released by the insurance company indicate that white women experienced the largest relative decrease in mortality during 1942, slightly more than 10 per cent from the average rate during the 1939-1941 period. Their death rate from tuberculosis in 1942 was 23.1 per hundred thousand. White males showed a decline of under 2 per cent with a rate of 41.4 per hundred thousand. The bulletin states that at the time of the first world war the tuberculosis mortality among the policyholders was about five times the current figure. The mortality from tuberculosis in 1942 for Negroes had fallen 5 per cent for women and 7 per cent for men as compared with the prewar average. The improvement is gratifying since it has been achieved in the face of increased industrial employment among the Negroes but, on the other hand, the bulletin points out, one must remember the higher standard of living that increased employment and income have brought to many of these people.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 29, 1943.

British Medical Association Representatives Reject Government Proposals for a State Medical Service for All

A representative committee was appointed by the British Medical Association to enter into noncommittal discussions with the minister of health on the Beveridge scheme for a complete state medical service for all persons. The committee was appointed at his request. Discussions have been proceeding for two months and the committee, which undertook to report from time to time to the profession, has presented its first report. The Ministry of Health put forward tentative proposals for a comprehensive medical service based on central and local administration and the employment of doctors as salaried officers, mainly whole time, by a new type of local authority. The representative committee came to the conclusion that further discussion on the basis of the proposals made by the Ministry of Health would be unfruitful. It therefore met the minister of health and told him that, though not empowered to commit the medical profession, it believed that the proposals would be contrary to the public interest and unacceptable to the great majority of the medical profession. It therefore asked for its withdrawal.

In reply the minister of health stated that the only government commitment on the subject of a comprehensive health service was that which was outlined by the government in the House of Commons. The government was not committed to any particular form of medical service. His proposals were put forward only as a basis of discussion and he agreed to a reexamination of the whole position. He would proceed to express his conclusions in a paper which would then be open for consideration by the public and the medical profession before final decision by Parliament. The representative committee of the British Medical Association accepted these assurances and decided to continue noncommittal discussions with the minister.

At a mass meeting of the Metropolitan Counties Branch of the British Medical Association the deputy secretary, Dr. Charles Hill, delivered an address which revealed the objections of the representative committee to the scheme. The minister of health proposed to set up at the center a medical service council, three fourths of the members to be nominated by the profession and the remainder by the minister. Locally there would be a grouping of most local authorities for health purposes by means of joint boards. There might be medical membership of these boards but it would probably be small. General practice would be based on health centers, where clinical work would be done. Believing that competition for patients under the roof of the center would be undesirable, the minister proposed that, in the main, general practice should be on a salaried basis. Those now in general practice could enter the service as whole time or part time officers. In the latter case they could continue private practice among those who, though entitled to the state service, preferred to consult a doctor privately. But new entrants would have no choice. After an initial period as house officer an entrant would receive $2,000 a year for three years. Then he would normally become a principal at a salary of $3,250, rising by annual increments of $150 over eighteen years to $6,000. Expenses, including travel, would be paid in addition.

Dr. Hill asked "Why such hurry? Why was the government pressing forward with such energy one section of the Beveridge proposals? Was it anxious to do something and found a profession of 50,000 men and women easy to handle?" A free profession was to be transmuted into a branch of local government service. Whatever might be thought of the methods of remuneration, as a profession they could not accept this. Some of them knew from their experience that the caliber of members of local authorities would not justify the handing over to them of personal domiciliary and other medical practice. The committee had suggested that the only effective way of dealing with the whole problem was to remove it from the ambit of the present discussions and to place it before a royal commission (a commission appointed by the government to investigate certain questions. It takes evidence on them and then formulates conclusions).

New Life Saving Devices at Sea: Drinking Water from Sea Water

A satisfactory method of producing drinkable water from sea water has been the subject of experiment for some time. The Ministry of War announces that distillation has proved to be the best method and that all lifeboats and ocean going merchant ships are to be equipped with stills. Three types have been produced by the Department of Scientific and Industrial Research, which has been making experiments on behalf of the Ministry of War Transport. One, already in production, produces half a gallon of fresh water per hour. Thus on a fourteen day voyage the still, working ten hours daily, would produce 70 gallons, twice the amount necessary for a lifeboat intended for 40 persons. The still can be worked with either solid fuel or paraffin, but it is intended to rely primarily on coal briquettes, which are readily stored in odd corners of the lifeboat, supplemented by any wood or waste material in the boat or recovered from the sea. The other two types consume paraffin and are expected to have a higher output in relation to fuel consumption. Their development is continuing, with the intention of offering the shipping industry a choice.

The stills are also to be used for boiling water to make hot drinks, and their heated surfaces will dry wet clothes. The fresh water already carried in tanks in lifeboats will be maintained. In addition the ministry is producing a new type of device, made of cotton fabric, for catching rain. In a demonstration, given in a ship on the Thames, it was shown that the stills are simple to work. The ministry is also producing improved life saving waistcoats fitted with rope gear to facilitate rescue, portable ladders to enable men in the water to climb into lifeboats, new lifeboat ration biscuits with an increased fat content and side seat extensions to provide facilities for lying down.

Fitness Center for Miners

Since the outbreak of war much attention has been given to the treatment and the after-treatment of injuries, which has become more specialized and is carried out at organized centers. The latest example is the opening at Gleneagles, in Scotland, of the fitness center for miners. It is an indication of the importance attached by the government to the waste of physique and the need for a scientific system of rehabilitation after injury or illness. The experiment is being watched not only by people interested in coal mining but by those concerned with the replacement in industry of men discharged from the forces. The problem of rehabilitation has been studied by the Department of Health for Scotland in conjunction with the Miners' Commission.

It has been shown that the average period of disability after fractures—which form a large part of the disabling injuries of miners—can be halved and the number permanently disabled reduced by methodical treatment. There was a gap to be filled between the time the patient leaves the hospital and when he is fit to return to work. The idea is to create the will to get

well and the desire to resume work. For this it has been found advisable to get rid of the atmosphere of the hospital ward. Hence there are no nurses in the rehabilitation center and no hours of idleness. The patients are examined carefully and graded according to the activity of which they are capable. Whatever grade they are allotted to they do a full day's work, their remedial exercises being adapted to their various needs. Into this treatment physical therapy, occupational therapy and physical and vocational training and massage enter. Entertainment is considered important and is provided by a cinema and in other ways, including talent supplied from among the patients themselves. The average duration of the fitness treatment is about six weeks. Those who have passed through the center are loud in their praises of it.

AUSTRALIA

(From Our Regular Correspondent)

May 27, 1943.

The Australian War Pharmacopeia

Although Australia today is reasonably well supplied with most essential drugs for medical purposes, it is of the utmost importance that every effort should be made to conserve present supplies. This has been partially achieved by widespread appeals to medical practitioners to avoid prescribing medicines unless medicinal treatment is especially indicated, and emphasis has been placed on the necessity for introducing uniformity into prescription writing.

In pursuance of these principles the Medical Equipment Control Committee has recently published an Australian War Pharmacopeia which, it is hoped, will supersede all other standing pharmacopeias throughout the commonwealth during the war period. The selection of medicines included in this work covers most ordinary therapeutic requirements, but nonessential drugs have been eliminated and those which are in short supply or are more urgently needed in different phases of the national war effort have been limited as far as possible or been replaced by alternative drugs. The pharmacopeia has been distributed throughout the commonwealth, and the cooperation of Australian pharmacists has been sought. It has already been adopted by several large hospitals in the various states. The voluntary acceptance of this work by the medical profession will constitute an important contribution to the conservation of drugs in wartime Australia.

The Tuberculosis Problem in Australia

It is not known whether there has been any increase in tuberculosis in Australia during the present war period. Medical practitioners are not forced to notify cases unless the patient reacts to the Mantoux test and is found to have visible tubercle bacilli in the sputum. The medical profession of this country has for years emphasized the importance of early diagnosis and treatment of tuberculosis and the need for financial provision for the immediate dependents of the tuberculous and for a commonwealth organized rehabilitation project. The adoption by the commonwealth early in the war of routine x-ray examination of entrants for the Australian Imperial Forces and Royal Australian Air Force has constituted a forward step toward the achievement of these measures. But at present there are only a few centers where microradiography for the diagnosis of tuberculosis is undertaken for civilians, and no systematic survey has been attempted.

The economic aspect of the problem has been somewhat alleviated under wartime conditions. In peacetime a man was dependent on his employer and often dared not say that he was tuberculous. If he was forced to enter a sanatorium there was no adequate financial support provided for his family, and there were so many men available that he experienced great difficulty in finding work on reentering civil life. Now the manpower authorities deal with such cases, and they are placed back in gainful occupations. The village settlement scheme for rehabilitation, which has been successful in other countries, has not been tried out in Australia.

Agar Production in Australia and New Zealand

During the past two years the possibilities of agar-agar production in Australia and New Zealand have been explored. Here in Australia agar is being produced from a red seaweed, Gracilaria confervoides, which is easily harvested and is available in quantity. The results so far achieved have been promising. The agar produced has a higher ash and lower nitrogen content than the Japanese variety and a somewhat lower gelling power but has provided suitable mediums for the growth of most bacteria.

In New Zealand two species of Gelidiaceae offer commercial possibilities owing to their relative abundance, easy identification and good yield. Last year the Council for Scientific and Industrial Research carried out small scale experiments with one of these, Pterocladia lucida, with satisfactory results. Further investigations are now in progress.

Pyoderma Ulcerosum Tropicalum—A New Clinical Entity

Under the term pyoderma ulcerosum tropicalum Capt. O. Alpins (A. A. M. C.) describes an infectious skin disease which incapacitated a large number of men serving in certain tropical areas in the Northern Territory of Australia. He considers it to be a new clinical entity. The condition is epidemic in the wet season (December to May) when the vegetation is moist and flourishing, the incidence falling considerably with the onset of drier conditions. Regarded as predisposing factors are lowered resistance from previous illness, malnutrition (especially lack of vitamins), fatigue and absence of suitable protective clothing. The infection can generally be traced to scratches from vegetation or barbed wire, and probably to the scratching of mosquito bite and "prickly heat." The incubation period varies from six to twelve hours. The lesions are mainly situated on the extensor surfaces, such as the knees, the upper parts of the legs, the forearms and the backs of the hands. They are characterized by the development of primary discrete vesicles with associated areas of inflammation. The vesicles have a whitish appearance but contain straw colored fluid. Soon they break, forming a superficial circular ulcer the edges of which are thickened in varying degrees and surrounded by a painful cellulitis. When left alone the ulcer becomes covered by a firm yellowish crust, under which the ulcer deepens and extends, until eventually the crust breaks, exposing a deep ulcer, varying from 1 to several inches in diameter. The condition was experimentally transmitted by autoinoculation, by the inoculation of vesicle and ulcer material intradermally and by the swabbing of material into an abrasion on 5 subjects who were free from any previous skin complaint. In early cases (one week) a pure growth of group A hemolytic streptococci was obtained and in later cases a mixed growth of group A hemolytic streptococci and Staphylococcus aureus. Swabbings from the experimental inoculations yielded a hemolytic streptococcus with a few columns of Staphylococcus aureus. Alpins concludes that the organism responsible is a hemolytic streptococcus, a Staphylococcus aureus infection being superimposed.

A Drug Plant Survey

The Council for Scientific and Industrial Research is at present carrying out an extensive survey in coastal Queensland areas for the purpose of locating indigenous or naturalized plants which may be sources of certain drugs such as caffeine, ephedrine, cocaine and quinine substitute, and of substances such as derris. Analyses of the material collected are being carried out by the Department of Pharmacy and Physiology of the Universities of Sydney and Melbourne respectively.

Deaths

Karl Landsteiner, New York, renowned for his research on human blood groups and the chemistry of immunity, Nobel Prize winner in 1930, died in the Hospital of the Rockefeller Institute for Medical Research, New York, June 26, of heart disease, aged 75.

Dr. Landsteiner was born in Vienna, Austria, June 14, 1868 and graduated in medicine at the University of Vienna in 1891. He studied chemistry for a while with Emil Fischer but soon devoted himself to pathologic research and teaching. In 1898 he was appointed assistant in the Pathologic-Anatomic Institute of the University of Vienna. In 1908 he became prosector at the Wilhelmen Spital in Vienna, serving there in 1909 as lecturer on pathologic anatomy and in 1911 as professor extraordinary. The disturbances in Vienna after World War I led Dr. Landsteiner to go to the Netherlands, where he worked at the R. K. Ziekenhuis at The Hague as prosector until 1922, when he was invited to join the staff of the Rockefeller Institute for Medical Research, New York. In 1939 he was one of a group who were retired under a mandatory rule. However, he diligently continued his work in the laboratory made available by the institute, and it was here that he became ill Thursday, June 24.

In 1930 Dr. Landsteiner was awarded the Nobel Prize in medicine for his discovery of isoagglutination and the human blood groups. This discovery has had a profound influence on therapeutic blood transfusion by obviating its hazards. It also made it possible to determine parentage in certain cases and to trace the source of blood stains. His first statement about human isoagglutination appeared in a footnote to an article in 1900 about the agglutinating and other actions of blood serum and lymph. He also demonstrated the mechanism of paroxysmal hemoglobinuria, in which blood is broken down when a foot or an arm is chilled. With Popper, Dr. Landsteiner in 1909 first transmitted infantile paralysis to the monkey; this was followed by the experimental work of others which brought to light all we now know of the nature of the causative agent of this disease. Another outstanding achievement was his study through many years of fundamental problems in immunity, particularly the chemistry of the specificness of immune reactions. A revision of his book The Specificity of Serological Reactions, a classic in its field, was published not long ago. He also introduced a method of darkfield demonstration of the microorganism of syphilis. Only recently he showed that drug allergy partakes of the nature of typical immune reactions. He also took an active part in the work that led to the discovery of the Rh factor, which has been found to play an essential role in erythroblastosis fetalis.

Besides the Nobel Prize, Dr. Landsteiner received many honors, notably the annual prize of the Hans Aronson Foundation of Berlin in 1926, the Paul Ehrlich gold medal in 1930, the gold medal of the Dutch Red Cross Society in 1933 and the Cameron Prize of the University of Edinburgh in 1938. Honorary degrees were conferred on him by the University of Chicago, Cambridge University, Harvard University and the University of Brussels. He was made a Chevalier of the French Legion of Honor. He was a member of, or held honorary fellowship in, the National Academy of Sciences, the American Philosophical Society, the Royal Swedish Academy of Science, the Danish Academy of Science, Deutsche Akademie der Naturforscher, the Swedish Medical Society, the Harvard Society, the Royal Society of London, Société Belge de Biologie, Pathological Society of Great Britain and Ireland, Vienna Medical Society, New York Academy of Medicine, American Society of Naturalists, Royal Society of Medicine, Pathological Society of Philadelphia, Reale Academia delle Scienze (Italy) and the Medical Chirurgical Society of Edinburgh. In 1929 he was president of the American Association of Immunologists.

Dr. Landsteiner married Helene Wlasto in 1916. Both became American citizens, and their son, Dr. Ernst Landsteiner, is a graduate of the Harvard Medical School and now a surgical resident at the Peter Bent Brigham Hospital in Boston.

Dr. Landsteiner's death closes a brilliant career. He was a shy and modest man. The worldwide acclaim and recognition were deserving tributes to his patient devotion to pure research. The practical application of his results he left to others.

Harry Gaylord Dorman ✠ Cambridge, Mass.; Columbia University College of Physicians and Surgeons, New York, 1900; an Associate Fellow of the American Medical Association; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; fellow of the American College of Surgeons; formerly professor of pediatrics, professor of obstetrics and gynecology and dean at the American University of Beirut School of Medicine, Syria; for many years pediatrician, gynecologist and obstetrician to the American University Hospital at Beirut; attending surgeon to the Johanniter Hospital, Beirut, from 1916 to 1918 and consulting surgeon to the Turkish Military Hospital from 1916 to 1918; head of the Red Cross Relief Expedition to Adana, Turkey, in 1908; author of a textbook of "General Pathology," 1906; aged 67; died, April 22, of coronary thrombosis.

Emory John Brady ✠ Colorado Springs, Colo.; Detroit College of Medicine, 1901; past president of the El Paso County Medical Society; member of the American Psychiatric Association and the Central Neuropsychiatric Association; past vice president of the American Association of Private Psychiatric Hospitals; served for two terms as a member of the House of Representatives and one term in the Senate; at one time on the staffs of the Michigan Asylum for the Insane, Kalamazoo, Mich., Woodcroft Hospital, Pueblo, assistant superintendent of the Newberry (Mich.) State Hospital and superintendent of the Myron Stratton Home; owner and superintendent of the Colorado Springs Psychopathic Hospital; a director of the Colorado Springs National Bank; a member and formerly director of the Colorado Springs Rotary Club; aged 68; died, April 19, of bronchopneumonia.

Montague Sydney Woolf ✠ San Francisco; L.R.C.P., of London and M.R.C.S. of England, 1914; associate clinical professor of surgery at the University of California Medical School; specialist certified by the American Board of Surgery; member of the American Proctologic Society; fellow of the American College of Surgeons; visiting surgeon to the University of California Hospital and Laguna Honda Home; on the staffs of the Childrens and St. Mary's hospitals; served in the Royal Army Medical Corps during World War I; author of "Principles of Surgery for Nurses"; consulting surgeon to the Southern Pacific Railroad; aged 59; died, April 20, of bacterial endocarditis.

Julius Napoleon Hill, Murphy, N. C.; University of Louisville (Ky.) Medical Department, 1909; member of the Medical Society of the State of North Carolina; president of the Cherokee County Medical Society for several terms; served as a medical officer in the U. S. Army during World War I; for many years Cherokee County physician; a trustee of the Murphy city schools and the Western North Carolina Teachers College, Cullowhee; on the courtesy staff of the Petrie Hospital; aged 57; died, April 27, in the Veterans Administration Facility, Atlanta, of chronic myocarditis and arterial hypertension.

Edward Henry French, Quincy, Mass.; Dartmouth Medical School, Hanover, N. H., 1882; member of the New Hampshire Medical Society and the American Psychiatric Association; assistant superintendent of the New Hampshire State Hospital, Concord, from 1883 to 1896; superintendent of the Medfield State Hospital from 1896 to 1917; in 1935 was presented with a gold medal by the New Hampshire Medical Society in recognition of his fifty years of membership in the society; aged 86; died, May 4, in the Baker Memorial, Massachusetts General Hospital, Boston, of coronary thrombosis.

Harry Lowenburg Sr., ✠ Philadelphia; Medico-Chirurgical College of Philadelphia, 1901; specialist certified by the American Board of Pediatrics, Inc.; veteran of the Spanish-American War; served as a captain in the medical corps of the U. S. Army during World War I; formerly lecturer in pediatrics at his alma mater; chief in pediatrics at Mount Sinai and Philadelphia General hospitals; consulting chief to the Jewish Hospital; formerly medical director of the Northeastern Hebrew Orphans' Home; aged 64; died, April 8, of heart disease.

Dewitt Peake Bailey, Binghamton, N. Y.; University of the City of New York Medical Department, New York, 1889; aged 76; died, April 30, in the Binghamton City Hospital of pneumonia.

Harry William Bauer, Palmyra, N. J.; Medico-Chirurgical College of Philadelphia, 1909; member of the Medical Society of New Jersey; aged 58; died, April 19, in the Cooper Hospital, Camden, of cerebral hemorrhage.

Ceasar George Cahen, Los Angeles; University of Southern California College of Medicine, Los Angeles, 1909; member of the California Medical Association; chief consulting surgeon of the French Hospital; served as a major in the French army during World War I; a member of the French Legion of Honor; aged 58; died, April 29, of heart disease.

Roy Munro Collie ✠ Schenectady, N. Y.; Albany (N. Y.) Medical College, 1906; a member of the board of trustees of the Schenectady Savings Bank; aged 59; on the staff of the Ellis Hospital, where he died, April 24, of hypertensive heart disease.

Gaines Stanley Dobbins Jr., Cumberland, Ky.; University of Louisville School of Medicine, 1938; member of the Kentucky State Medical Association; examining physician for the Selective Service System; member of the staff of the Lynch (Ky.) Hospital; aged 32; died, April 30.

Raymond Goulden Edmans, Troy, N. Y.; Albany (N. Y.) Medical College, 1898; formerly coroner of Rensselaer County and deputy health commissioner; medical examiner for the Metropolitan Life Insurance Company for many years and served as chief examiner for several other insurance companies; aged 71; on the staff of the Troy Hospital, where he died, April 22, of heart disease.

Clarence P. Gammon, Tacoma, Wash.; Rush Medical College, Chicago, 1899; member of the Washington State Medical Association; formerly a member of the state board of health; veteran of the Spanish American War and World War I; member of the staff of St. Joseph's Hospital; served as surgeon for the Union Pacific Railroad for many years; aged 70; died, April 24, of coronary disease.

William Vincent Guttery ✠ Middletown, Ill.; St. Louis Medical College, 1881; an Affiliate Fellow of the American Medical Association; aged 92; died, April 20, of chronic myocarditis.

John Frank Hogan, Birmingham, Ala.; Birmingham Medical College, 1903; member of the Medical Association of the State of Alabama; formerly on the staff of the Davis Infirmary; aged 66; died, April 30, of traumatic abscess of liver.

Willard Carlisle Johnson ✠ Detroit; Harvard Medical School, Boston, 1927; member of the Medical Society of the State of New York; aged 47; died, April 23, of coronary occlusion.

Robert Rives Jones, Winston-Salem, N. C.; Medical College of Virginia, Richmond, 1923; member of the Medical Society of the State of North Carolina; formerly a member of the city health department; aged 45; served on the staffs of the Kate Bitting Reynolds Memorial Hospital, North Caroline Baptist Hospital and the City Memorial Hospital, where he died, April 13, of cerebral hemorrhage.

George Warton Kaan, Sharon, Mass.; Harvard Medical School, Boston, 1890; member of the Massachusetts Medical Society; served as treasurer of the Norfolk District Medical Society; professor of clinical gynecology emeritus at the Tufts College Medical School, Boston; formerly on the staffs of the Free Hospital for Women, Adams Nervine Asylum and the New England Deaconess Hospital, Boston; a founder and for many years on the staff of the Boston Dispensary for Women; aged 88; died, April 14, in Stoughton of prostatic hypertrophy.

Harry Delman Kelly, Council Bluffs, Iowa; John A. Creighton Medical College, Omaha, 1903; member of the Iowa State Medical Society; member of the staff of the Mercy Hospital; aged 60; died, April 20, in the Doctors' Hospital, Omaha, of bronchopneumonia.

George W. Kennedy, Beulaville, N. C.; University College of Medicine, Richmond, 1898; for many years a member of the school board, aged 64; died, April 7, of angina pectoris.

John W. Laird, Mount Pleasant, Iowa; Hahnemann Medical College and Hospital, Chicago, 1900; member of the Iowa State Medical Society; past president of the Henry County Medical Society; served during World War I; health officer of Mount Pleasant; aged 71; died, April 26, of coronary thrombosis.

Erford Haskell Lamb, Cornelia, Ga.; Atlanta College of Physicans and Surgeons, 1911; member of the Medical Association of Georgia; aged 65; died, April 23, of influenza and myocarditis.

Smith J. Mann, Livermore, Calif.; Willamette University Medical Department, Salem, Ore., 1907; member of the American College of Chest Physicians; served during World War I; manager of the Veterans Administration Facility; aged 60; died, April 27, of coronary thrombosis.

Charles Lewis Marks, Montgomery, Ala.; University of Virginia Department of Medicine, Charlottesville, 1904; member of the Medical Association of the State of Alabama; aged 61; died, April 30, of heart disease.

Thomas Alexander Norment, Lumberton, N. C.; North Carolina Medical College, Davidson, 1894; aged 72; died April 10, in the Thompson Memorial Hospital of arteriosclerosis.

Paul Wilmer Oakes, Cleveland; Western Reserve University School of Medicine, Cleveland, 1938; member of the Ohio State Medical Association; examining physician for draft board number 3; served on the staffs of the Lakewood (Ohio) Hospital, Evangelical Deaconess Hospital and the Fairview Park Hospital, where he died, April 21, of nephritis, aged 35.

Samuel Orr Price, Taylor, Miss.; Memphis (Tenn.) Hospital Medical College, 1912; member of the Mississippi State Medical Association; aged 59; died, April 15, of heart disease.

Herman F. Prill, Augusta, Wis.; Milwaukee Medical College, 1902; member of the State Medical Society of Wisconsin; aged 68; died, April 11, in the Luther Hospital, Eau Claire, of arteriosclerotic heart disease.

John Joseph Randall ✠ Wynantskill, N. Y.; Albany (N. Y.) Medical College, 1917; member of the American College of Chest Physicians; served as a captain in the medical corps of the U. S. Army during World War I; medical director and superintendent of the Pawling Sanatorium; formerly medical director of the Sunny Acres, Cleveland Tuberculosis Sanatorium, Warrensville, Ohio; on the consulting staff of the Samaritan Hospital and medical director of the chest clinic, Troy; aged 51; died, April 29, of carcinoma.

Adolph Reich ✠ New York; University of the City of New York Medical Department, New York, 1891; formerly clinical professor of gynecology at the New York Polyclinic Medical School and Hospital; aged 78; died, April 27, of lymphosarcoma.

Robert Macfeely Shea, Denver; University of Colorado School of Medicine, Denver, 1913; member of the Colorado State Medical Society; fellow of the American College of Surgeons; a lieutenant in the U. S. Navy during World War I; for many years district surgeon for the Union Pacific Railroad; member of the staffs of St. Luke's, Children's, St. Anthony's, St. Joseph's and Presbyterian hospitals; medical director of the Mercy Hospital, where he died, March 21, of myocarditis, aged 60.

Laban Aaron Steeves ✠ Salem, Ore.; University of Oregon Medical School, Portland, 1921; served in the medical corps of the U. S. Navy during World War I; aged 49; died, March 30, of heart disease and hypertension.

George Washington Thume, Lincoln, Neb.; Kansas City (Mo.) Medical College, 1898; served as a first lieutenant in the medical corps of the U. S. Army during World War I; aged 66; died, April 10, of thyroid disease, diabetes mellitus and heart disease.

Charles C. Vinsant ✠ Maryville, Tenn.; University of Tennessee Medical Department, Nashville, 1907; on the staff of the Fort Craig Hospital; aged 66; died, April 22, of hypernephroma of the left kidney.

DeFriste Vogt, Cleveland; Hospital College of Medicine, Louisville, Ky., 1884; aged 80; died, April 26, of heart disease.

John Leaman Winters, Blue Ball, Pa.; Jefferson Medical College of Philadelphia, 1890; member of the Medical Society of the State of Pennsylvania; aged 74; died, April 14, of arteriosclerosis.

DIED IN MILITARY SERVICE

Samuel Albert Barkoff, New Orleans; Louisiana State University School of Medicine, New Orleans, 1938; member of the Louisiana State Medical Society; began active duty as a first lieutenant in the medical reserve corps of the U. S. Army in June 1941 and later became a captain; aged 28; died, April 17, in Tampa, Fla., of injuries received in an airplane accident.

Morris Lawrence Dressler, Belmont, Mass.; Tufts College Medical School, Boston, 1921; member of the Massachusetts Medical Society; formerly served as city physician of Cambridge and as trustee of the Cambridge City Hospital; served during World War I and as a major in the National Guard; major in the medical corps, Army of the United States, stationed at Fort Dix, N. J., where he died, May 6, of acute gangrenous cholecystitis, aged 44.

Frank Woodward Quin ✠ Surgeon, Lieutenant Commander, U. S. Navy, retired, Little Rock, Ark.; Medical Department of Tulane University of Louisiana, New Orleans, 1911; entered the medical corps of the U. S. Navy in 1920 and retired in 1940; served during World War I; called back to active duty in March 1941; attached to the U. S. Marine Corps Receiving Station; aged 64; died, March 21, in St. Vincent's Infirmary of cerebral hemorrhage and hypertensive heart disease.

Bureau of Investigation

MISBRANDED PRODUCTS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE.—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act and in cases in which they refer to drugs and devices they are designated D. D. N. J. and foods, F. N. J. The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Ace High Effervescent Preparation.—Premium Color Works, New York, and The Pepe-Maisano Company, New Haven, Conn. Shipped Aug. 30, 1940. Composition: not definitely reported, but mention was made of "an added poisonous or deleterious substance" (borax). Use of product not stated. Adulterated because of presence of borax, which was declared to be unsafe within the meaning of the law. Misbranded because listing of "citric acid" was false and misleading, since this was not one of the ingredients. Further misbranded because label did not bear the common or usual name of each of the actual ingredients.—[*F. N. J., F. D. C. 2550; July 1942.*]

Apex Special Hair Pomade and Apex Pomento.—Apex News and Hair Company, Inc., Atlantic City, N. J. Shipped July 1, 1940. Composition: "Pomade" consisted of petrolatum with a small proportion of coal tar; composition of "Apex Pomento" not reported. Both products misbranded because their containers were so made, formed or filled as to be misleading. The Pomade was misbranded further in the false representations that it would be effective "for stubborn cases of dandruff, thin and falling hair" and would be excellent for thin temples. Pomade was misbranded also because label did not list common or usual names of active ingredients.—[*D. D. N. J., F. D. C. 526; September 1942.*]

Chase Formula.—Chase Laboratory, Detroit. Shipped Oct. 15, 1940. Composition: essentially a fatty oil (about 16 per cent), oleic acid (about 5 per cent), mineral oil (about 2 per cent), alcohol (by volume, 17.8 per cent) and a small amount of triethanolamine, with water. Misbranded because falsely represented as an effective treatment for athlete's foot, lumbago, poison ivy, body lice, many types of eczema and skin disorders caused by external infections, itching hives and shingles. Further misbranded because active ingredients were not conspicuously listed on the label and quantity or proportion of alcohol present was not correctly declared, since the statement "denatured alcohol 25%" was incorrect.—[*D. D. N. J., F. D. C. 522; September 1942.*]

Common-Sense Liniment.—T. H. Jackson and Company, Quincy, Ill. Shipped Aug. 8, 1940. Composition: essentially linseed oil, pine oil, guaiacol, paraffin oil and a small amount of ammonia. Declared misbranded because label falsely represented that the product would be an effective treatment for ailments of man requiring an external application; that it possessed healing and relieving properties and was efficacious in treating muscular rheumatism, sciatic rheumatism, nervous headache, lame back, ear disorders, soft corns, cuts, sores and some other conditions.—[*D. D. N. J., F. D. C. 525; September 1942.*]

Dr. Senftner's Glucocinine.—Glucocinine Company of America, Richmond Hill, N. Y. Shipped between Jan. 20 and 30, 1941. Composition: essentially powdered plant tissues including potato starch. Adulterated because its strength differed from, and its purity or quality fell below, that which it purported to be in the labeling, namely, "plant insulin substances," "vegetable insulin," "Glucocinines are extracted by a special process. The resulting preparation is . . . free from carbohydrates." Misbranded because falsely represented to be a "plant insulin" which would be an effective treatment for diabetes by mouth, to be "positively unsurpassed" and to help stimulate the pancreas gland to produce insulin of its own. Further misbranded because label failed to give the common or usual name of each of the active ingredients.—[*D. D. N. J., F. D. C. 521; September 1942.*]

Kresto.—Bestov Products, Inc., Long Island City, N. Y. Shipped Dec. 5, 1940. Composition: a mixture of sugar, cocoa malt, and possibly a small amount of skimmed milk. Misbranded because of false label statements "Health Energy . . . An extract of the most nutritive foods of nature . . . It is very rich in vitamins. . . . Kresto aids the digestion of other foods and . . . is a food prepared especially for nourishing the organism with the minimum of digestive effort. Kresto contains in correct proportion all the substances necessary for strengthening the brain, nourishing the bones, increasing the red corpuscles in the blood building up the tissues, creating strong muscles and firm flesh . . . Alimentary value: 43 calories to each teaspoonful. It contains carbohydrates, proteins, fats and mineral substances." Further misbranded because label failed to give the common or usual name of each ingredient.—[*F. N. J., F. D. C. 2547; July 1942.*]

Leucorrhea Special No. 9.—C. F. Breitenbach (Mucine Company), Chicago. Shipped between Jan. 22 and Nov. 11, 1940. Composition: quinine sulfate (0.64 per cent), boric acid (19.95 per cent) and thymol, the whole incorporated in petrolatum. Adulterated because not of the strength and quality indicated, and misbranded because of misrepresentation that the nostrum was good for leucorrhea and because labeling did not bear adequate directions for use. Further misbranded because label failed to bear name and place of business of manufacturer, packer or distributor, since designation "Ainsworth Specialty Co., Kansas City, Mo.," did not make clear this concern's connection with the product, and because label did not give the common or usual name of each active ingredient or the quantity of the contents. Also misbranded because label failed to bear adequate directions for use.—[*D. D. N. J., F. D. C. 436; September 1942.*]

McClintock's Formula for Diabetes.—Robert McClintock, Ann Arbor, Mich. Shipped between March 21 and May 24, 1940. Composition: essentially sulfuric acid, alcohol (75.05 per cent by volume) and water, flavored with cinnamon oil. Misbranded because falsely represented as an efficacious treatment for diabetes and because of label claim, "Reg. with U. S. Food and Drug Administration," since it was not so registered.—[*D. D. N. J., F. D. C. 520; September 1942.*] This product was one of the subjects of the Post Office fraud order issued July 14, 1938, debarring McClintock's quackish business from the mails, the details of which appeared in this department of THE JOURNAL, Dec. 24, 1938, page 2409.

Pick-Me-Up Bath and Hangover Bath.—Xandra, Ltd., New York. Shipped between Feb. 7 and Dec. 21, 1940. Composition: "Pick-Me-Up Bath"—essentially ammonia (16.5 per cent by weight), alcohol (36 per cent by volume), water and green coloring matter; "Hangover Bath"—same composition except that the ammonia was 15.7 per cent by weight and the alcohol 40 per cent by volume. Misbranded because names of treatments gave false impression and also because labels did not bear common or usual names of active ingredients or declare quantity or proportion of alcohol present.—[*D. D. N. J., F. D. C. 528; September 1942.*]

Prevent-All.—C. F. Breitenbach (Mucine Company), Chicago. Shipped between Jan. 22 and Nov. 11, 1942. Composition: essentially 4.4 per cent of calomel and 9.3 per cent of zinc oxide, the mixture incorporated in wool wax (lanum). Adulterated because its strength differed from, and its quality fell below, that which it was represented to possess. Misbranded because composition claim on label "Lanum base 67%—Calomel 33%" was false and misleading, as were the representations that this was a "combination to prevent all sexual diseases in the male. Gonorrhea, chancres (syphilis) . . . destroys micro-organism and prevents incubation . . . endorsed and recommended by leading physicians." Further misbranded because label failed to bear name and place of business of manufacturer, packer or distributor, since designation "Ainsworth Specialty Co., Kansas City, Mo.," did not make clear this concern's connection with the product, and because label did not give the common or usual name of each active ingredient or its quantity.—[*D. D. N. J., F. D. C. 436; September 1942.*]

Savol and Savol Cream.—Savol Chemical Company, Mercer, Pa. Shipped between Sept. 3 and Oct. 30, 1940. Composition: "Savol"—essentially cresols, alkali soaps and a small amount of phenol in water; "Savol Cream"—essentially zinc oxide, barium sulfate, petrolatum and perfume. Bacteriologic examination showed that Savol Cream was not antiseptic. Savol misbranded because falsely represented to be an effective treatment for nasal catarrh, hay fever, bites of animals and irritation of the throat, and a preventive of infected sores, abscesses, boils, felons and all complications due to infections. Savol Cream misbranded because falsely labeled to be efficacious as an antiseptic for cuts, bites of animals, all forms of hemorrhoids, skin disorders in general, sore throat, croup, enlarged glands, boils, felons, ulcers and eczema, or as an after-treatment of boils, felons, carbuncles and erysipelas. Both products misbranded because labels failed to list common or usual names of active ingredients or to give accurate statements of the quantity of contents.—[*D. D. N. J., F. D. C. 523; September 1942.*]

Sto-Bo-Ki.—Robert McClintock, Ann Arbor, Mich. Shipped between March 21 and May 24, 1940. Composition: essentially sulfuric acid, alcohol (77.5 per cent by volume) and water, flavored with aromatics. Misbranded because statements, "The digestive remedy . . . Use it only until ailment ceases," were false and misleading since the product was not efficacious as a digestive remedy and its use would not cause cessation of digestive ailments. Also misbranded because label did not give the common or usual name of the active ingredient, sulfuric acid, or the quantity, kind and proportion of alcohol present.—[*D. D. N. J., F. D. C. 520; September 1942.*] This product was one of the subjects of the Post Office fraud order issued July 14, 1938, debarring McClintock's quackish business from the mails, the details of which appeared in this department of THE JOURNAL, Dec. 24, 1938, page 2409.

Waft-Surgical.—Waft Products, Inc., Springfield, Ill. Shipped Aug. 21, 1940. Composition: essentially water, formaldehyde, small amounts of turpineol and a yellow-green coloring material. Misbranded because falsely represented as an effective antiseptic, disinfectant, fungicide, germicide or parasiticide in the dilutions suggested, or as a wet dressing or irrigation in wounds in these dilutions. Further misbranded because represented to penetrate the environment, inhibit disease-producing micro-organisms or be efficacious for sterilizing surgical instruments,—[*D. D. N. J., F. D. C. 524; September 1942.*]

Correspondence

"SYPHILIS AND THE NEGRO"

To the Editor:—The article by Dr. Smillie in the June 5 issue of The Journal concerning syphilis and the Negro, and the editorial comment, serve to give needed emphasis to an important problem. But in characterizing the problem as a purely Negro one there is grave danger of overlooking some important facts concerning the treatment and prevention. Why is the syphilis rate so much higher in the Negro than in the white? To quote Dr. Smillie, "Among the whites syphilis has become, in the great majority of cases, a disease of the ignorant, the careless, the criminal and the social outcast." Do not the same conditions apply to syphilis in any group? The Negro is discriminated against economically and educationally; it would be difficult to find conditions more favorable to the development of crime, carelessness and social ostracism than the poverty and ignorance engendered by the wage and educational differentials that are too often the lot of the Negro. In this connection the chart published with your editorial comment (p. 378) is quite significant. It shows educational deficiencies as a cause, second only to syphilis, of rejection of Negro males by Selective Service local boards, whereas this factor did not appear in the first ten causes of rejection in the white group. This is more than a mere coincidence. It would be a serious mistake to attempt to treat this problem by merely dispensing large quantities of antisyphilitic drugs without at the same time attempting to cure some of the serious socioeconomic conditions underlying it.

Robert E. Fullilove Jr., M.D., New Orleans.

To the Editor:—In the article "Syphilis in the United States Primarily a Negro Problem" (The Journal, June 5, p. 365) and the emphasis and further presentation of statistical evidence (p. 378) I am impressed not only with the implications of the biometrical conclusions reached but more especially with the apparent lack of appreciation of the underlying medicosocial problems which are universal and which know no racial barriers or identification.

1. A low economic level with its slums, overcrowding, poor nutrition, poor recreational facilities, lack of certain cultural opportunity and educational advantages and other means of sublimative practice would tend to facilitate the spread of infectious disease in general and syphilis in particular.

2. A more practical effective, intensified, educational program which would reach the innermost recesses of the population would not only acquaint them with the scourges of venereal disease but would serve to create eventually a higher sense of values generally.

3. These things are not characteristic of any particular race of people but are broadly applicable to sociologic concepts in which disease, famine, poverty and the other scourges of the human race fall heir principally to the low educational-economic stratum of human society.

4. The large percentage of the Negro population incidentally fall into this group; a selective relative analysis of this group as a whole would reveal little if any difference in racial incidence.

5. The medical profession as a whole could be an effective force in achieving the correction of this basic fault in our society, which is first sociologic and, second, medical.

W. C. Sampson, M.D.,
General Hospital No. 2,
Kansas City, Mo.

PREVENTION OF INFANTILE PARALYSIS

To the Editor:—In view of the approaching season for possible poliomyelitis epidemics, it seems wise to summarize possible suggestions for limiting the spread of the disease. These suggestions are founded on present day knowledge, viz.:

In the presence of the disease in a community:

1. Avoid the use of any water that is possibly contaminated with sewage either for drinking, swimming or washing utensils. We know that sewage can carry the virus considerable distances and for an appreciable time.

2. Avoid exhaustion from exertion or chilling. We know that overexertion and chilling during the incubation period tend to augment the oncoming disease.

3. Avoid injury to the mucous membranes of the nose and throat, such as that resulting from a tonsil operation. We know that poliomyelitis exposures in the early post-tonsillectomy period are liable to result in severe—even fatal—infections, usually of the bulbar type.

4. Treat every minor illness as a possible case of poliomyelitis, particularly if there is fever, headache and some spasm of the neck, spine and hamstrings. We know that very mild cases of poliomyelitis without recognizable paralysis are much more numerous than paralytic cases. Suspected patients should be kept quiet in bed for several days, and until passed as well by a competent examiner.

5. Strive for proper sanitary conditions and, in particular, destroy flies and their breeding places. We know that flies can carry the causative virus of poliomyelitis, although it has not yet been proved that they can carry enough to infect human beings.

6. Avoid unnecessary physical contacts with other people, wash hands carefully before eating, and don't put unclean objects in the mouth. We know that many healthy people carry the virus in their intestines and that for some cases, perhaps most, the port of entry of the infection is the mouth.

7. Don't prescribe or take drugs or chemicals that are intended to protect against the disease. As yet we know of none that will do this.

Philip M. Stimson, M.D., New York.

COLOR BLINDNESS

To the Editor:—The editorial on color blindness and conclusion was read with interest. In this connection may I relate an experience I had during routine physical examination of men applying for positions in a large industrial plant. I found an applicant who was color blind and informed him of his condition, as in the type of work required of the applicant color blindness did not enter into the question of accepting or rejecting him for the position. I casually inquired what work he was doing before coming here and he replied that he was a color matcher in a cloth manufacturing concern. This aroused my curiosity and I asked him to tell me frankly how he was able to get along as a color matcher when he was definitely color blind. He replied "The boss would bring a paddle which was colored and told me to match it, which I did." He never asked what color the paddle was. Which shows that over a period if a person is instructed in the right color he is looking at he can in time learn to call the correct color, even if to him it seems like a different color.

E. M. Feiman, M.D., Canton, Ohio.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, June 26, page 702.

BOARDS OF MEDICAL EXAMINERS

CALIFORNIA: *Oral.* Los Angeles, Aug. 9. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento.

CONNECTICUT: * *Written.* Hartford, July 13-14. *Reciprocity.* Hartford, July 27. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven.

DELAWARE: Dover, July 13-15. *Reciprocity.* Dover, July 20. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: * Washington, Nov. 8-9. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington.

HAWAII: Honolulu, July 12-15. Sec., Dr. J. A. Morgan, 55 Young Bldg., Honolulu.

IDAHO: Boise, July 13. Dir., Bureau of Occupational Licenses, Mrs. Lela D. Painter, 355 State Capitol Bldg., Boise.

ILLINOIS: Chicago, Oct. 12-14. Superintendent of Registration, Department of Registration and Education, Mr. Philip M. Harman, Springfield.

INDIANA, Indianapolis, Sept. 14-16. Sec., Board of Medical Registration & Examination, Dr. W. C. Moore, 301 State House, Indianapolis.

IOWA: * Iowa City, Dec. 27-29. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

KANSAS: Topeka, Dec. 14-15. Sec., Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

KENTUCKY: Louisville, Nov. 15-17. Sec., Dr. A. T. McCormack, 620 S. Third St., Louisville.

MARYLAND: Baltimore, Dec. 14-17. Sec., Dr. J. T. O'Mara, 1215 Cathedral St., Baltimore.

MASSACHUSETTS: Boston, July 13-16. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413-F State House, Boston.

MISSISSIPPI: Jackson, September. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: *Endorsement.* Jefferson City, July 12. Sec., State Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct. 5-6. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

NEVADA: *Reciprocity.* Carson City, Aug. 2. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

NEW HAMPSHIRE: Concord, Sept. 9-10. Sec., Board of Registration in Medicine, Dr. D. G. Smith, State House, Concord.

NEW MEXICO: * *Endorsement.* Santa Fe, Oct. 11-12. Sec., Dr. LeGrand Ward, 141 Palace Ave., Santa Fe.

OHIO: *Endorsement.* Columbus, Oct. 7. *Written.* Columbus, Dec. 4. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON: * Portland, July 21-24. Sec., Dr. L. S. Besson, 608 Failing Bldg., Portland.

SOUTH DAKOTA: * Pierre, July 20. Dir., Medical Licensure, State Board of Health, Dr. Gilbert Cottam, Pierre.

TEXAS: Galveston, Aug. 2-4. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas.

VERMONT: Burlington, Dec. 15-17. Sec., Dr. F. J. Lawliss, Richford.

VIRGINIA: Richmond, Dec. 14-17. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WASHINGTON: * Seattle, July 12-14. Dir., Department of Licenses, Mr. Thomas A. Swayze, Olympia.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

DISTRICT OF COLUMBIA: Washington, Oct. 18-19. Sec., Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington.

IOWA: Des Moines, July 13. Dir., Division of Licensure & Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MINNESOTA: Minneapolis, Oct. 5-6. Sec., Dr. J. C. McKinley, 126 Millard Hall, Univ. of Minnesota, Minneapolis.

NEBRASKA: Lincoln, Oct. 5-6. Dir., Bureau of Examining Boards, Sec., Dr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln.

OREGON: Portland, Oct. 30. Sec., State Board of Higher Education, Mr. C. D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Aug. 18. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Failure to Notify Appropriate Health Officer of Inflammation in Newborn's Eyes.—The plaintiff's eyes were swollen more than normal when he was delivered by the defendant physician April 4, 1940. At the physician's direction, silver nitrate drops were instilled in the eyes. On April 7 when the physician next saw the child the eyes were "still a little swollen" and "there was some discharge from both eyes," which the physician attributed to the silver nitrate. When he next called, April 11, a nurse directed his attention to the fact that there was a continued swelling in and discharge from both eyes and that in the left eye "there was something on the ball that appeared like a blister which would not wash off with the boric acid solution she had been using" at the physician's direction. After examining the eyes the physician assured the mother that "they were perfectly all right and would be O. K." and prescribed a 5 per cent solution of mild protein silver. The physician was notified on the 15th that the swelling in the left eye and the spot in its center were more pronounced. The next day the child was taken to the defendant's office. The "left eye was bulging and had a grayish appearance or a dull appearance." The physician suggested a consultation with an eye specialist, and an appointment was made for the following day, but before that time the eye ruptured. When it failed to respond to treatment it was removed May 6. Suit for malpractice was subsequently brought against the defendant, it being alleged that the spot in the left eye was a corneal ulcer "which by prompt use of available treatment could have been cured." The physician claimed that the condition was due to a congenital weakness and that the eye could not have been saved by any known treatment. From a judgment for the physician, the plaintiff appealed to the court of appeals of Ohio, Williams County.

An Ohio statute (General Code, Section 1248-2) makes it the duty of a physician attending at a childbirth and knowing within two weeks after birth of inflammation, swelling, redness or unnatural discharge from the eyes of the infant [by statute defined as "inflammation of the eyes"] within six hours to report such fact as the state board of health might direct to the appropriate local health officer. The local health officer in turn is under a statutory duty (1) to transmit the report to the state board of health (whose duties were subsequently assumed by the state department of health) and to conduct such investigation as the state board shall direct and (2) to conform to such regulations as the board may promulgate (*ibid.*, section 1248-3). The state board is required by statute to provide, if necessary, daily inspection and prompt treatment to an infected infant (*ibid.*, section 1248-4). A regulation of the state board, in addition to rules as to how physicians must report, which rules are substantially as specified in the statute, provides that, if "the condition of the case so requires, in addition to the written report, an immediate notice of such case shall be given to the health commissioner in the most rapid manner available."

The plaintiff alleged as a ground of negligence on the part of the physician that the physician failed to report to the local health officer that the plaintiff was suffering from "inflammation of the eyes." The trial court withdrew that allegation from the consideration of the jury, and its action was urged as error on appeal. The appellate court held that the trial court erred in so doing and as authority for so holding relied on *Medlin* v. *Bloom,* 230 Mass. 201, 119 N. E. 773, and on *Jones* v. *Stanko, Adm'x,* 118 Ohio St. 147, 160 N. E. 456.

In the *Medlin* case the attending physician was sued by a child who had lost the sight of both eyes soon after birth. The birth occurred April 14, swelling in the eyes was observed April 22 and the physician was called on the 24th but did not respond to the call until the evening of the 25th. The evening of the 26th he called again and thereafter reported the case to the board of health by mail. The board promptly caused the child to be sent to a hospital for special treatment, but it did not avail. A Massachusetts statute required the attending physician to give immediate notice to the appropriate board of health if one or both eyes of the infant became inflamed, swollen and red and showed an unnatural discharge within two weeks after birth. The trial court in that case refused to instruct the jury that if it found that the physician violated the statute that violation would be evidence of negligence on his part. The appellate court in Massachusetts in that case said:

> Upon this record it could not properly have been ruled as matter of law that the delay of the defendant in notifying the board of health of the plaintiff's condition was not evidence of negligence. It was for the jury to determine whether the defendant immediately gave the notice required by the statute. If he failed in this respect, such failure was evidence of negligence which could have been found to have resulted as a proximate cause of the plaintiff's blindness.

The *Jones* case involved the failure of a physician to comply with an Ohio statute which required a physician attending a person suffering from smallpox to report the case to the appropriate health officer, who in turn was required to report the matter to the board of health, which was to cause an inspection to be made and a quarantine established. As a result of the defendant physician's failure in that case to make such a report, the plaintiff's decedent died from smallpox contracted from the physician's patient. The trial court in that case refused to instruct the jury that, if it found that the physician failed to comply with the provision of the statute and that such failure was the proximate cause of the death of the decedent, the verdict should be for the plaintiff. The action of the trial court in this regard the appellate court in Ohio in that case held was prejudicial error, and a judgment in favor of the physician was reversed.

In principle, said the court of appeals, the effect of failure to give notice was the same in this case as it was in the *Jones* case. From the undisputed evidence, the condition of the plaintiff's eye and the defendant physician's knowledge of it were such on April 11, if not before, that he should have reported it, and his failure to do so was a violation of the statute. In this respect the situation is more unfavorable to the physician than it was in the *Medlin* case, in which a report was actually made, and the jury question was whether it was made within the time required. If not, the court in that case said it "could have been found to have resulted as a proximate cause of the plaintiff's blindness." What would that court have said had no report ever been made? Can it be said that because this defendant completely ignored the statute he can escape any civil responsibility which may follow from his dereliction of duty? This question is decisively answered in the *Jones* case. The defendant physician here urged that the treatment that the plaintiff might have had had the statutory notice been given would only have resulted in a chance of recovery, which is not enough to sustain a verdict. But, answered the appellate court, there was positive evidence that the plaintiff's affliction was a corneal ulcer which was curable, not might be curable, which tended to prove that he had more than a "chance of recovery" had proper treatment been provided. Whether the condition was a corneal ulcer and could have been cured were matters for the jury to determine.

At the trial the testimony of the specialist to whom the defendant physician referred the plaintiff was received in evidence by a deposition. He was called by the plaintiff and on direct examination his testimony related only to the identity of material from the enucleated eye, part of which had been used in making some slides for microscopic examination by other medical expert witnesses who testified for the plaintiff. On cross examination, the defendant qualified this specialist as an expert witness over the plaintiff's objection that the procedure was improper cross examination, interrogated him concerning the condition that he found in the eye and concerning his opinion as to what had caused that disease condition and made necessary the removal of the eye. This cross examination was assigned as error by the plaintiff. The Ohio rule on the limits of cross examination, said the appellate court, is stated in the syllabus in *Legg* v. *Drake*, 1 Ohio St. 286, as follows:

> When a witness is produced and examined by a party in an action, even though he be interested to testify against the party calling him, the other party is not limited, in his cross-examination to the subject matter of the examination in chief, but may cross-examine him as to all matters pertinent to the issue on the trial; limited, however, by the rule that a party cannot, before the time of opening his own case, introduce his distinct grounds of defense or avoidance, by the cross-examination of his adversary's witnesses.

The pleadings and evidence in this case, said the appellate court, raised but two questions as determinative of the ultimate issue, the liability of the defendant physician; namely, (1) Was the defendant negligent as charged and (2), if so, did such negligence proximately cause the plaintiff's damage? The only defense was a general denial. On these questions the plaintiff had the burden of proof. The defendant had no "distinct grounds of defense or avoidance." Hence any relevant and material evidence was "pertinent to the issue on trial," and no error was committed by permitting the cross examination objected to.

The measure of a physician's duty to his patient, said the court, is stated in *Gillette* v. *Tucker*, 67 Ohio St. 106, 65 N. E. 865, as follows:

> A surgeon and physician, employed to treat a case professionally, is under an obligation, which the law implies from the employment, to exercise the average degree of skill, care, and *diligence* exercised by members of the same profession, practicing in the same or a similar locality, in the light of the present state of medical and surgical science.

Certain instructions tendered by the defendant physician and given to the jury attempted to lay down a measure of a physician's duty to his patient in various ways, but in all of these instructions the element of "diligence" was omitted. The element of diligence, said the appellate court, was particularly important in this case, for it appears that the derelictions of duty with which the defendant physician was charged were mostly those of omission. It is manifest that some unhealthy condition existed in the plaintiff's eye which was not caused by the defendant. The real question is Did the physician fail to do something that his duty required him to do promptly which had it been done would have resulted in cure of that unhealthy condition and prevented the loss of the eye? Hence "diligence" was the all important element, and its omission from these instructions was misleading to the jury and rendered the instructions prejudicially erroneous. The element of "diligence" was also omitted in other instructions given to the jury, which spoke only of treatment but were silent on the failure to treat. Particularly in one of these instructions it told the jury that "If you find that the sole proximate cause of plaintiff's injury was a condition which existed at the time of his birth, you should return a verdict for the defendant." This instruction failed to take into account the possibility that the jury could find that had the defendant employed the care, skill and diligence the law required of him, the "condition which existed at the time of birth" could have been cured.

Because of the errors noted, the judgment in favor of the physician was reversed and the cause was remanded for a new trial.—*Dietsch v. Mayberry, 47 N. E. (2d) 404 (Ohio, 1942).*

Society Proceedings

COMING MEETINGS

Utah State Medical Association, Salt Lake City, Aug. 27-28. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

12:253-288 (March) 1943

Endometriosis. H. Linder.—p. 253.
Progress in Pediatrics: With Special Consideration of Newer Sulfonamide Drugs. Bessie Mae Beach.—p. 256.
Recognition and Obstetric Significance of Contracted Pelves. T. M. Boulware.—p. 263.
Cosmetics H. R. Cogburn.—p. 267.

American Journal of Clinical Pathology, Baltimore

13:1-60 (Jan.) 1943. **Partial Index**

Hemolytic Reactions as Result of Isoimmunization Following Repeated Transfusions of Homologous Blood. P. Vogel, N. Rosenthal and P. Levine.—p. 1.
Pathologic Findings in Poliomyelitis. W. B. Dublin and C. P. Larson.—p. 15.
Effect on Erythrocytes of Single Administration of Promin (Sodium P,P'-Diaminodiphenylsulfone-N, N'Didextrose Sulfonate): An Experimental Study. G. M. Higgins.—p. 28.
"Silent" Skeletal Metastases in Cancer. R. J. Stein.—p. 34.
Clinical Enzyme Studies: Factors Involved, Clinical Usefulness and Suggested Method for Expressing Enzyme Activities. V. C. Myers and A. H. Free.—p. 42.

13:61-122 (Feb.) 1943

Autopsy Studies in Pneumococcic Pneumonia. A. W. Frisch.—p. 61.
Autopsy Studies in Type III and Friedländer's Pneumonia. A. W. Frisch.—p. 69.
Hemolytic Transfusion Reactions: IV. Differential Diagnosis: "Dangerous Universal Donor" or Intragroup Incompatibility? A. S. Wiener and W. C. Moloney.—p. 74.
Blood Group Reactions in Cord Bloods of Indians, Calcutta, India. Eileen W. Erlanson MacFarlane.—p. 81.
*Leukocytic Index: Its Value in Diagnosis and Prognosis. L. A. Turley and J. T. McClellan.—p. 87.
Standardized Toxicologic Tests for Clinical Laboratories. C. A. Hellwig.—p. 96.
Improved Method for Concentrating Serum and Plasma in Cellophane Casings. R. E. Hoyt and M. Levine.—p. 105.
Photoelectric Colorimeter: Construction and Use. R. C. Hanselman.—p. 108.

Leukocytic Index.—The leukocytic index is established by dividing the number of polymorphonuclear leukocytes (neutrophils) by the number of lymphocytes or by dividing the polymorphonuclear percentage by the lymphocyte percentage. It is not necessary to consider the numbers of any other cells since these two types of cells are by far the most important in resistance to disease, especially to infectious and toxic states. Turley and McClellan compared the leukocytic index with the clinical course in various infectious cases in the University Hospital. An average normal leukocytic index was established by making blood counts on 7 healthy persons with normal hemograms and computing the index. The indexes so obtained were 1.8, 1.8, 1.4, 1.5, 2.8 and 1.8. This would make an average normal index approximately 1.8. The authors present 11 cases in which the neutrophilic-lymphocytic ratio was compared with the clinical course. The cases presented various types of infection. Similar characteristic reactions were observed in all of them. The authors agree that the leukocytic or lymphatic index is a valuable indicator of the condition of the patient. It is a reliable factor in prognosis of infectious diseases and is an aid in determining the optimal time for surgical procedures. A high or rising leukocytic index indicates low resistance and a prognosis the seriousness of which is in proportion to the height of the index. A low or falling leukocytic index shows a high or increasing resistance and a prognosis the favorableness of which is in proportion to the smallness of the index.

American J. Digestive Diseases, Fort Wayne, Ind.

10:81-120 (March) 1943

Adenylic Acid in Treatment of Agranulocytosis and Mucous Membrane Lesions: "Some Biochemical Aspects of Leukopenia." S. L. Ruskin, New York.—p. 81.
*Considerations on Diagnosis of Large Gastric Ulcers and Implications as to Treatment. F. Steigmann, Chicago.—p. 88.
Prolapsed Gastric Mucosa: Roentgenologic Demonstration of Ulcer Crater in Prolapsed Polypoid Mucosa. A. Melamed and R. I. Hiller, Milwaukee.—p. 93.
Multivitamin Prophylaxis and Therapy in Respiratory Diseases of the Aged. L. L. Kay, New York.—p. 96.
Incidence of Intestinal Parasites in Tropical Area of Brazil: Figures Based on Examination of Stools of 2,500 Patients. J. R. Cancado, Belo Horizonte, Brazil.—p. 98.
Some Clinical Studies on Psychosomatic Background of Peptic Ulcer. A. Winkelstein and L. Rothschild, New York.—p. 99.
The Nervous Stomach. O. S. Jones, St. Louis.—p. 102.
Insulin Reaction and Cerebral Damage That May Occur in Diabetes. F. D. Murphy and J. Purtell, Milwaukee.—p. 103.
Jejunal Diverticula: Consideration of Clinical Symptomatology and Case Report. A. C. van Ravenswaay; and G. W. Winn, Boonville, Mo.—p. 108.
Gastric Acidity in Pulmonary Tuberculosis. A. L. Kruger, Jersey City, N. J.—p. 111.

Diagnosis of Large Gastric Ulcers.—Steigmann analyzes more than 200 cases of large gastric ulcer seen on x-ray study at the Cook County Hospital in the last ten years. The results make him question the value of the signs and symptoms thought by some to be typical of benign or malignant ulcers. Only microscopic examination of the resected lesion can give the exact diagnosis. Sections for such study must be taken from various parts of the large ulcer crater, its walls, floor and margins, before a definite opinion can be given. Failure to follow this precaution has resulted in the death of patients from carcinoma several months after the resected lesion was reported benign. The therapeutic implications are clear. Resection of every large gastric ulcer is advisable not only because of the danger of an erroneous diagnosis but also because complications of large ulcers make them really malignant when they are microscopically benign. It is doubtful that there is such a thing as complete healing of a large gastric ulcer on medical treatment. In view of the complications that may arise, even when a large ulcer is benign, and the possibility that they may be carcinomatous, one should not be content until such a lesion is resected.

American Journal of Diseases of Children, Chicago

65:355-518 (March) 1943

*Lipid Nephrosis: Observations Over Period of Twenty Years. H. Schwarz, J. L. Kohn and S. B. Weiner.—p. 355.
Excretion of 17-Keto Steroids by Normal and by Abnormal Children. N. B. Talbot, A. M. Butler, R. A. Berman, P. M. Rodriguez and E. A. MacLachlan.—p. 364.
Respiratory Metabolism in Infancy and in Childhood: XXVII. Regulation of Body Temperature of Premature Infants. R. Day with Technical Assistance of J. Curtis and Margaret Kelly.—p. 376.
*Effects of Various Urinary Antiseptics on Strains of Escherichia Coli: I. Sulfathiazole; II. Urinary Acidity, Mandelic Acid, Methenamine and Methenamine Mandelate; III. Relative Value of Sulfathiazole, Sulfadiazine, Sulfapyridine, Sulfacetimide and Sulfanilamide. H. F. Helmholz.—p. 399.
Calcium and Phosphorus Requirements of Premature Infants. Helen R. Benjamin, H. H. Gordon and Eleanor Marples.—p. 412.
Acute Lymphatic Leukemia in Childhood. Dorothy Falkenstein and W. M. Fowler.—p. 445.
Rate of Secretion of Parotid Glands in Normal Children: Measurement of Function of Autonomic Nervous System. R. S. Lourie.—p. 455.

Lipid Nephrosis.—Lipid nephrosis as a distinct clinical entity is rather infrequent. In over twenty years in the pediatric service at the Mount Sinai Hospital, Schwarz and his co-workers have made such a diagnosis for only 40 children. In that same period they observed over 400 children with typical symptoms of acute or chronic glomerular nephritis. Twenty-two of the 40 patients have died. The surviving children have been seen regularly at least three times during the year; 8 of them have been under observation for from seven to twenty years. Four of the older group showed in later phases hypertension, occasional albuminuria and increased Addis counts. The others, with 1 exception, have at present an increased Addis count and no hypertension. The authors believe that these patients had a glomerular nephritis from the onset. The nephrotic syndrome would then be a phase in the life cycle of the disease. The improvement of some of the patients after an

acute infection, such as measles, is important. The authors cannot give a satisfactory explanation for the mechanism which makes the kidney less permeable to albumin, and induces diuresis. Such improvement is not noted in chronic glomerular nephritis. The microscopic studies on 12 necropsies revealed a histologic picture of the glomeruli different from that seen in chronic glomerular nephritis. A patient first seen with a typical clinical picture of acute glomerular nephritis with gross hematuria manifested within the next year typical symptoms of lipid nephrosis. The patient died of peritonitis. The necropsy showed meager glomerular changes. The authors conclude that most children with the classic clinical picture of lipid nephrosis have a glomerular involvement but perhaps in a different form from that seen in chronic or subacute glomerular nephritis.

Urinary Antiseptics and Escherichia Coli.—Helmholz demonstrated great variation in the effect of sulfathiazole on twenty-one strains of Escherichia coli. Twenty more strains were tested for the bactericidal action of sulfathiazole. The results indicated a low resistance of all but four strains of Esch. coli to sulfathiazole. When the concentration of sulfathiazole was increased from 2 mg. to 200 mg. per hundred cubic centimeters, three of the four resistant strains were killed off. At the highest level, 200 mg. per hundred cubic centimeters, strain 22 still grew actively when it was inoculated in numbers of less than 100 bacilli to 0.5 cc. of urine. The author investigated the bactericidal effect of various concentrations of the drug on four strains, two highly resistant and two only slightly resistant. The most striking deduction to be drawn from these investigations is that the maximal concentration of sulfathiazole at which different strains of Esch. coli resist its bactericidal action may vary from 0.1 mg. to more than 200 mg. per hundred cubic centimeters. Although the number of strains resistant to sulfathiazole is small, the resistance of the infecting strain may account for the failure of therapy in any particular case. The second significant feature is that the size of the inoculum of bacteria may determine the bactericidal action. The author reports studies on the resistance to other urinary antiseptics applied to the two resistant strains. He tried out four different procedures: antisepsis resulting from (1) acidity, (2) mandelic acid, (3) methenamine mandelate and (4) methenamine. He found that strains resistant to sulfathiazole were also resistant to urinary acidity and mandelic acid but were more susceptible to methenamine and methenamine mandelate than nonresistant strains. Bactericidal action of sulfanilamide, sulfapyridine, sulfathiazole, sulfadiazine and sulfacetimide on these four strains gave the impression that sulfathiazole and sulfadiazine are more effective against Esch. coli than sulfacetimide, sulfapyridine or sulfanilamide. In concentrations of 0.5 mg. per hundred cubic centimeters sulfathiazole is more effective than sulfadiazine.

American Journal of Pathology, Ann Arbor, Mich.

19:197-370 (March) 1943. **Partial Index**

Calcification and Phosphatase. G. Gomori.—p. 197.
*Nature of Renal Lesion with Sulfonamides and Its Prevention with Urea. S. S. Sobin, L. M. Aronberg and H. C. Rolnick.—p. 211.
Erythrophagocytosis and Hemosiderosis in Liver and Spleen in Sickle Cell Disease. J. Stasney.—p. 225.
In Vivo Neutralization of Pertussis Toxin with Pertussis Antitoxin. D. H. Sprunt and D. S. Martin.—p. 255.
Effect of Crystallized Bovine Serum Albumin on Tissues of Normal Animals: I. Morphologic Changes in Normal Rabbits Induced by Intravenous Injection of Crystallized Bovine Serum Albumin. O. T. Bailey and C. v. Z. Hawn.—p. 267.
Interstitial Cell Growths of Testicle. S. Warren and K. W. Olshausen.—p. 307.
Focal Glomerulitis in Elderly Patients. P. Gross and W. Morningstar.—p. 333.
Development of Myocardial Necrosis and Absence of Nerve Degeneration in Thiamine Deficiency in Pigs. R. H. Follis Jr., M. H. Miller, M. M. Wintrobe and H. J. Stein.—p. 341.

Renal Lesion Following Use of Sulfanilamide.—Curtis and Sobin found that in vitro solubility of acetylsulfathiazole increased at a given p_H in proportion to the specific gravity of the urine. Theoretical considerations and experimental data suggested to Sobin and his associates that the responsible factor in the increase of solubility of these materials in more concentrated urines was probably an increasing amount of urea. Forty-eight adult white male rats were divided into four groups of 12 and treated as follows: Groups 1 and 2 were each given 1 mg. of sodium acetylsulfapyridine per gram of body weight, but in addition group 2 received 5 mg. of urea per gram of body weight. Groups 3 and 4 received 3 mg. of sodium acetylsulfapyridine per gram of body weight and group 4 received in addition 10 mg. of urea per gram of body weight. Untreated rats of the same age were used as controls. The drugs were administered in solution through a stomach tube. The volume of solution of sodium acetylsulfapyridine was calculated on the basis of rat weight, and the urea was added. Animals were treated over periods of seven to fourteen days. The daily water intake and the weight were noted. Serial sections of both kidneys were studied. The authors concluded that: 1. Intrarenal foreign material following sulfonamide drug therapy is of two types, precipitated sulfonamide and its acetylated products and cellular débris with calcium and iron deposited around or on this material. 2. Urea simultaneously administered with sodium acetylsulfapyridine will prevent the precipitation of sulfonamides and formation of renal calculi in rats. 3. The action of urea is independent of a diuretic effect and is due to a specific solvent action on the acetylsulfapyridine. 4. The nephrotoxic properties of acetylsulfapyridine are mechanical in nature and result from precipitation of the drug in the renal tract. 5. Calcification and the resultant renal calculus formation in sulfonamide treated animals is dependent on local tissue damage and secondary deposition of calcium and iron on focal, nonviable structures.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

49:289-432 (March) 1943

Newer Aspects of Cancer Research: Caldwell Lecture, 1942. C. P. Rhoads.—p. 289.
Million Volt Roentgen Therapy for Intrathoracic Cancer: Palliative Effects in a Series of 63 Cases. W. L. Watson and J. Urban.—p. 299.
Postirradiation Stricture of Rectum and Sigmoid Following Treatment for Cervical Cancer. P. E. Wigby.—p. 307.
Effect of Roentgen Rays on Growing Long Bones of Albino Rats: II. Histopathologic Changes Involving Endochondral Growth Centers. C. L. Hinkel.—p. 321.
Contributions of Roentgenology to Diagnosis of Chronic Constrictive Pericarditis. H. J. Stewart, J. R. Carty and J. R. Seal.—p. 349.
Diagnosis of Congenital Heart Lesions in Children. G. W. Grier.—p. 366.
Leiomyosarcoma of Stomach: Report of Case. C. G. Lyons and M. Schneider.—p. 393.
Melorheostosis: Report of Bilateral Case. J. W. J. Carpenter, D. R. Baker, S. P. Perry and T. Outland.—p. 398.
Hemophilic Arthritis: Roentgenographic Studies in 15 Adult Patients with Hemophilia. E. J. McDonald and E. L. Lozner.—p. 405.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

27:133-260 (March) 1943

Syphilis of Eye. A. C. Woods.—p. 133.
Use of Sulfathiazoline in Treatment of Gonococcic Urethritis in the Male. P. R. Leberman and R. Alexander.—p. 187.
Blood Bismuth Studies: Preliminary Report of Syphilitic Patients Treated with Water Soluble Preparation. M. H. Delp, Nellie Walker and C. W. Sondern.—p. 193.
*Treatment of Syphilis with Clorarsen. R. H. Kampmeier and H. B. Henning.—p. 208.
Comparison of Sensitivity of Kahn Reaction at 37 C. and 45 C. with Hinton Reaction. M. N. Green and H. J. Shaughnessy.—p. 218.
Syphilis and Elizabethan Playwrights and Pamphleteers. E. L. Zimmermann.—p. 226.

Treatment of Syphilis with Clorarsen.—According to Kampmeier and Henning, clorarsen (3 amino-4-hydroxy-phenyl dichlorarsine hydrochloride) has been used experimentally in the treatment of syphilis at Vanderbilt University Hospital for the past twenty months. The drug is closely allied to arsenoxide, to which it is probably converted within the body. A total of 4,348 doses have been given to 251 syphilitic patients. A single therapeutic dose produced dark field negativity within twenty-four hours in 42 of 45 cases of infectious syphilis studied. Healing of acute lesions was prompt. Chancres were healed by the end of the fourth week; all secondary and secondary relapse lesions were healed by the end of the fifth week. Over 50 per cent of the primary and secondary lesions were healed by the end of the second week. The reversal of the blood Wassermann and Kahn reactions under continuous antisyphilitic treatment with clorarsen and bismuth compounds was 100 per cent in primary syphilis by the seventeenth to the twentieth week and 91 per cent in secondary syphilis by the twenty-first to the twenty-fourth week. The probability of the reversal of

the Kahn reaction in acute syphilis was delayed over that of the Wassermann reaction. Seroreversal in early latency is definitely later than in acute syphilis. Clorarsen did not cause serious untoward reactions. Nausea, vomiting and diarrhea were the most common reactions. The drug was often used without reaction for patients who had had untoward reactions with other arsenical preparations.

American Review of Tuberculosis, New York

47:231-350 (March) 1943

*Cardiac Symptoms in Persons With Distortion of the Mediastinum Due to Pulmonary Tuberculosis: Report of 38 Cases. D. M. Brumfiel.—p. 231.
*The Heart in Pulmonary Tuberculosis: Clinicopathologic Study of 100 Autopsied Patients. J. E. Roberts nad J. R. Lisa.—p. 253.
*Air Embolism. Alternate Concept of Its Origin in Pneumothorax: Its Prevention and Treatment. J. G. Bohorfoush.—p. 263.
Diaphragmatic Paralysis and Closure of Tuberculous Cavities. R. T. Ellison and C. R. Tittle.—p. 269.
Vitamin Nutrition in Tuberculosis. H. R. Getz and T. A. Koerner. —p. 274.
Value of Cod Liver Oil and Tomato Juice in Prevention of Laryngeal Tuberculosis. M. McConkey.—p. 284.
Treatment of Tuberculosis of Oral Cavity by Carbon Dioxide Snow. J. Berberich.—p. 291.
Tuberculous Meningitis: Its Clinical Features as Observed in a General Hospital. J. Zaslow and B. Dickstein.—p. 296.
Scaphoid Scapula in Tuberculosis. E. Bogen and A. Rogers.—p. 303.
Case Finding in New York City: H. R. Edwards.—p. 308.
Tuberculosis in the Household: Its Occurrence in Marital Partners and Other Members of Household When Primary Case Was Parent or Another Member of Family. R. G. Hahn.—p. 316.
Follow-Up of Known Tuberculous Patient. K. R. Guest.—p. 325.
Epidemiology of Tuberculosis in a Low Income Group. R. E. Miller and B. Henderson.—p. 334.
Case Finding: A Five Year Study by the Denver Tuberculosis Society. V. V. Spaulding.—p. 341.
Lipid Pneumonia. A. M. Stokes.—p. 348.

Cardiac Symptoms in Mediastinal Distortion from Pulmonary Tuberculosis.—Brumfiel describes observations on 38 tuberculous patients with distortion of mediastinal structures and cardiac symptoms without a demonstrable cardiovascular disease. Evidence indicates that the distortions may cause cardiac symptoms. He had reported 15 such cases in 1933. Criteria for classifying the patients were (1) cardiac symptoms, (2) demonstrable distortion of the mediastinum by physical signs and roentgenograms, (3) a past history free from known heart disease or infections recognized to affect the heart, such as acute rheumatic infection or syphilis, and (4) absence of physical signs of cardiovascular disease and absence of other concurrent disease, such as syphilis or hyperthyroidism, known to affect the cardiovascular system either organically or functionally. As possible causes of mediastinal distortion in the tuberculous the author lists atelectasis of a lobe or of an entire lung, fixation and contraction of a thickened pleura following effusion, fibrosis and contraction of the pulmonary parenchyma and therapeutic pneumothorax. Distortions of the mediastinum may be either to the right or to the left. They may involve the entire mediastinum or be limited to the superior portion. The physical signs are variable. A loud systolic murmur is heard frequently over the pulmonary conus in distortion of the superior mediastinum to the left and occasionally over the aorta in right sided deformity. The commonest complaint was dyspnea in excess of that to be expected on a purely pulmonary basis. The symptom complex consisted generally of dyspnea, palpitation and weakness, with or without arrhythmia. One remarkable fact is the free interval between the establishment of the deformity and the onset of symptoms. There is no actual proof that distortion of the mediastinum and its contents may cause cardiac symptoms. Yet coincidence does not seem sufficient to explain that 38 such cases should be encountered by a single observer. The inference of a causal relationship seems inescapable. The improvement seen in certain cases after thoracoplasty presents additional evidence.

Heart in Pulmonary Tuberculosis.—Roberts and Lisa report clinical and pathologic observations in 100 cases of active pulmonary tuberculosis. Demonstrable myocardial lesions were present in 69. They consisted of tuberculous myocarditis in 10, acute rheumatic myocarditis in 1, Aschoff body-like lesions in 9, acute interstitial myocarditis in 50 and acute miliary infarctions in 11. Combinations of the lesions were found in 13. Healed rheumatic valvulitis was found in 5, sclerotic lesions of the mitral and aortic valves in 20, acute valvular endocarditis in 2 and syphilitic aortic valvulitis in 2. There were 3 instances each of tuberculous, chronic adhesive and acute nontuberculous pericarditis. Tuberculous myocarditis was more frequent in adults than in children. Nontuberculous pulmonary infections appeared to be a significant factor in the causation of the interstitial myocarditis. Miliary infarctions occurred predominantly in hypertrophied hearts, in hearts with severe coronary arteriosclerosis and in the later decades of life. The conception of a small heart in tuberculosis was not substantiated. Right ventricular hypertrophy was uncommon. Mensuration of the ventricular wall appeared to be an unreliable criterion for hypertrophy; the microscopic appearance of the myocardial fibers appeared more accurate. Disproportion between pulse rate and height of temperature was suggestive of myocardial disease. Murmurs due to organic valvular lesions were fairly common. Functional murmurs were uncommon. The conception that hypertension and active tuberculosis are incompatible was not borne out. Electrocardiographic tracings frequently revealed significant observations.

Air Embolism in Pneumothorax.—Bohorfoush states that air embolism following pneumothorax has been attributed to air entering the pulmonary vein and passing into the heart and the arterial system. This concept is not substantiated by manifestations in all of the cases. The explanation has been only partially satisfactory. Air is not found constantly in the heart or carotid arteries at necropsy, nor has the method by which air enters the pulmonary vein been adequately clarified. The author reports 2 cases which constitute his experience with this accident in over 10,000 inductions of pneumothorax. Necropsy in the fatal case failed to reveal injury to the lung. Air embolism was characterized by pain in the chest during the induction of air, onset of symptoms after the vertical position has been assumed and a latent period of a few seconds between the time of rising and the onset of symptoms. The clinical manifestations are similar to an attack of epilepsy; they consist of convulsions, Cheyne-Stokes respiration and tumultuous heart action. The transmission of air through the pulmonary veins in all cases is doubtful. The air may enter the veins in the thoracic wall and thence reach the cranial cavity through the superior vena cava or the vertebral system of veins. The following suggestions are made for the prevention and treatment of this condition. Never give air unless the manometric readings are satisfactory. Technical difficulties should be corrected after removing the needle from the thoracic wall. At the first indication of unexplained or unusual pain the needle should be removed and the head and trunk lowered. In aspirating fluid the syringe should not be removed from the needle or air introduced until fluid has been aspirated. If air embolism occurs, it is necessary to lower the head and trunk until the superior vena cava is below the level of the heart.

Archives of Neurology and Psychiatry, Chicago

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Grouping Behavior of Normal Persons and of Persons with Lesions of Brain: Further Analysis. W. C. Halstead and P. H. Settlage.—p. 489.
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Certain Abnormalities of Ocular Movements: Their Importance in General and Neurologic Diagnosis. F. B. Walsh.—p. 253.
Management of Patient Who Has Recovered From Acute Coronary Occlusion. R. L. Levy.—p. 273.

Canadian Journal of Public Health, Toronto

34:97-146 (March) 1943

Bacterial Food Poisoning: Part I. C. E. Dolman.—p. 97.
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Education Technics for Nutrition. L. B. Pett.—p. 121.
Detection of Tuberculosis in School Teachers in Province of Quebec. L. Laberge.—p. 125.
*Shiga Toxoid. Leone Farrell, with technical assistance of Helen Ferguson.—p. 130.

Shiga Toxoid.—Farrell describes a method of preparing and treating with solution of formaldehyde a toxic extract of Shigella dysenteriae. A toxin was prepared by autolysis of a "smooth" culture of Shigella dysenteriae. Incubation of the toxin at a reaction of from p_H 8.5 to p_H 8.8 with 1 per cent solution of formaldehyde yielded materials which were nontoxic for mice and rabbits in intravenous doses of 0.5 cc. and 5 cc. Mice injected subcutaneously with a total of 0.5 cc. of detoxified material ("toxoid") in three equally spaced doses resisted up to 50 minimum lethal doses of toxin intravenously. Mice which had received subcutaneously 15 serum units of antidysentery serum resisted, about twenty hours later, an intravenous dose of fifty minimum lethal doses of toxin. Rabbits which received three doses of toxoid derived from a total of 0.5 cc. of toxin developed from 1.5 to 15 serum units of antitoxin per cubic centimeter of serum. A "secondary stimulus" of about 0.085 cc. given one month after the third dose increased the titer of antitoxin from 15 to 65 serum units per cubic centimeter. Thirteen normal human subjects received from 1 to 9 injections of 0.1 to 0.5 cc. of toxoid without undue reaction. Two doses of 0.25 cc. evoked the production of antitoxin to a level of from 0.4 serum unit per cubic centimeter to 10 serum units per cubic centimeter in 7 of 8 subjects. After a third dose of 0.25 cc. all 8 subjects had a measurable amount of antitoxin. Of 7 subjects presumed on epidemiologic grounds to have had Shiga dysentery, 6 had measurable amounts of specific antitoxin (from 1.3 to 14 serum units per cubic centimeter) at least one year after recovery. Ten days after an injection of toxoid, these 6 subjects had a definitely increased titer of antitoxin (from 10 to 65 serum units per cubic centimeter). The seventh subject still had no detectable antitoxin (less than 0.3 serum unit per cubic centimeter).

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Journal of Clinical Investigation, Boston

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*Pneumococcic Pneumonia: Prognostic Significance of Number of Pneumococci in Sputum in Relation to Therapy, Bacteremia, Type, Leukocyte Count, Duration of Disease, Age and Degree of Involvement. A. W. Frisch, A. E. Price and G. B. Myers.—p. 207.
*Type III Pneumonia: Prognostic Significance of Reticulation in Relation to Number of Pneumococci in Sputum, Therapy, Bacteremia, Leukocyte Count, Age and Degree of Involvement. A. W. Frisch, A. E. Price and G. B. Myers.—p. 215.
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*Sulfonamide Fast Pneumococci: Clinical Report of 2 Cases of Pneumonia Together with Experimental Studies on Effectiveness of Penicillin and Tyrothricin Against Sulfonamide Resistant Strains. W. S. Tillett, Margaret J. Cambier and W. H. Harris Jr.—p. 249.
Nitrogen Storage Following Intravenous and Oral Administration of Casein Hydrolysate to Infants with Acute Gastrointestinal Disturbance. A. T. Shohl.—p. 257.
Traumatic Shock. A. M. Seligman and J. Fine.—p. 265.
Antitoxin Response in Man to Tetanus Toxoids. J. H. Mueller, L. R. Seidman and Pauline A. Miller.—p. 325.

Prognostic Significance of Pneumococci in Suptum in Pneumonia.—Frisch and his associates determined the average number of pneumococci per oil immersion field in Wright stained smears of rusty sputum at twelve hour intervals in 678 cases of pneumococcic pneumonia exclusive of type III. The close relationship between the highest sputum count during the course of the disease and the outcome was shown by the fact that the fatality rate was 2 per cent when the pneumococci did not exceed 10 per field, 9 per cent when 11 to 30 were present, 30 per cent when 31 to 75 organisms were found, and 77 per

cent when the number exceeded 75. The fatality rate was uniformly low in patients with less than 30 pneumococci per field and uniformly high in those with sputum counts above 30, regardless of the type of pneumococcus, duration of the disease prior to therapy, leukocyte count and blood culture. The unfavorable prognosis usually attributed to type, bacteremia, leukopenia and late pneumonia was due chiefly to the higher incidence of sputum counts over 30 per field in such cases. On the other hand, a comparison of cases whose sputum counts fell within the same range showed that age and extent of consolidation had a definite effect on the outcome since the fatality rate was significantly higher in patients over 54 or in those with consolidation of 2 or more lobes on admission to the hospital. It was concluded that the number of pneumococci in the sputum had the greatest influence on prognosis and that the most important accessory factors were the extent of involvement and the age of the patient. It was also found that modern chemotherapeutic agents (sulfapyridine, sulfathiazole and sulfadiazine) did not appreciably reduce the fatality rate in cases with sputum counts below 30 but were distinctly superior to sulfanilamide and serum in cases with counts above 30. The combination of serum and drugs appeared to be no more effective in the latter group than chemotherapy alone. The utilization of the sputum as a method of prognosis in pneumonia has simplified the statistical approach to this disease. All new drugs submitted for clinical trial could first receive preliminary study in selected patients with initial sputum counts of 20 or less. The efficacy of the drugs could be evaluated in these patients by repeated examination of sputum to determine whether or not they were capable of reducing the number of pneumococci as rapidly as sulfathiazole or sulfadiazine. If the sputum count failed to decrease, or actually increased within a specified time, therapeutic agents of proved value could be readily substituted without subjecting the patients to unnecessary hazards. The most promising drugs could then be studied in cases with more than 30 pneumococci per field in the hope that they might effect a significant reduction of the high fatality rate which still obtains with sulfathiazole and sulfadiazine in this group.

Prognostic Significance of Reticulation in Type III Pneumonia.—Frisch and his collaborators show that the type III pneumococcus differs from all other pneumococci in its capacity to produce excessive amounts of capsular polysaccharide, as manifested by a fibrin-like reticulum in Wright stained smears of rusty sputum. In 114 cases of type III pneumonia, reticulation in the sputum was by far the most important factor in determining the outcome. Thus the fatality rate was 79 per cent when reticulation was present and only 7 per cent when it was absent. Furthermore, fatality in reticulated cases was uniformly high regardless of the number of pneumococci in the sputum, the blood culture, the leukocyte count and the extent of the consolidation but was partially influenced by the factor of age. The unfavorable prognostic significance customarily attached to bacteremia and leukopenia in type III pneumonia was attributable to the fact that reticulation was almost invariably present in such cases. The outcome in the nonreticulated cases, as in the other types, was dependent on the number of pneumococci per field in the sputum. Sulfapyridine and sulfathiazole were superior to serum and sulfanilamide in the treatment of type III pneumonia because they prevented the formation of reticulation and reduced the fatality rate in reticulated cases from 100 to 67 per cent.

Effect of Penicillin and Tyrothricin Against Sulfonamide Fast Pneumococci.—The observations reported by Tillett and his associates were made on 2 patients with pneumococcic pneumonia and bacteremia. Pneumococci types I and VIII were isolated. These strains caused infections in mice that were totally refractory to sulfadiazine. The clinical course of the patients and the clinical laboratory data (blood cultures and sulfonamide concentrations in blood) also indicated the drug resistant characteristics of the infection. Both patients responded rapidly and successfully to specific therapy. In experimental observations penicillin was found to be highly effective against infections in mice caused by either sulfonamide resistant or susceptible strains. When tyrothricin in single doses was used for treatment of mice, the protection was not uniformly complete against any one of the strains. No evidence was obtained to indicate that sulfonamide resistance influenced the effect of tyrothricin. It was not possible to demonstrate that the drug resistance of the patients' strains was due to the production of inhibiting substances. By contrast, cultures of an additional strain of type I pneumococcus (MacLeod) were found to yield considerable amounts of inhibitor.

Journal of Immunology, Baltimore

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Influence of Benzene Poisoning on Streptococcic Infections in Rabbits: I. Benzene Poisoning and Natural Resistance to Intracutaneous Streptococcic Infection. R. J. Schnitzer and I. G. Goddard.—p. 133.
Effect of Alcoholic Intoxication on Acquired Resistance to Pneumococcic Infection in Rabbits. C. C. Lushbaugh.—p. 151.
*Demonstration of Efficacy of Vaccination Against Influenza Type A by Experimental Infection of Human Beings. W. Henle, Gertrude Henle and J. Stokes Jr.—p. 163.

Vaccination Against Influenza Type A.—Henle and his collaborators studied the efficacy of allantoic fluid vaccines in the prevention of experimental human infection with the virus of influenza A. Of 28 control subjects 10 came down with clinical influenza following inhalation of a recently isolated active virus. Only 1 case, which had not responded to vaccination, occurred among the 44 vaccinated persons, 27 of whom had been immunized four months prior to the exposure. There was good correlation between the preinhalation antibody level and the degree of protection in that most of the clinical cases occurred in the group with the lowest antibody titer as measured both by mouse protection and by inhibition of red cell agglutination technic. Increase in the antibody level decreased the morbidity. The clinical picture of the experimental disease confirmed the observation of earlier investigators. Since a number of individuals harbored pathogenic organisms in the upper respiratory tract, all clinical cases were treated with sulfonamides. No complications were encountered. Subclinical infections were numerous, as shown by slight elevations of temperature, mostly on the second or fourth day after inhalation, leukopenia below 5,000 or rises in antibodies two weeks after the exposure. These symptoms were independent of one another; either one alone or any combination of the three could be found. Virus was reisolated only from clinical cases.

Journal Industrial Hygiene & Toxicology, Baltimore

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Measurement of Industrial Lead Exposures by Air Analysis. J. Buxell.—p. 35.
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Industrial Lead Poisoning as Clinical Syndrome. W. F. Ashe.—p. 55.
*Health of Lead Exposed Storage Battery Workers. W. C. Dreessen.—p. 60.
Experimental Studies on Lead Absorption and Excretion and Their Relation to Diagnosis and Treatment of Lead Poisoning. R. A. Kehoe, J. Cholak, D. M. Hubbard, K. Bambach and R. R. McNary.—p. 71.

Health of Lead Exposed Storage Battery Workers.—A study of 766 storage battery workers by Dreessen disclosed that 177 were affected by "early plumbism"; 168 of these had abnormal lead absorption and 9 incipient plumbism. Only 4 per cent of the men exposed to less than 0.75 mg. of lead per 10 cubic meters of air showed signs of abnormal absorption, whereas 54 per cent of those exposed to more than 3 mg. had early plumbism. There were no important time trends. Both blood and urinary lead values were higher in the affected workers. These values also increased with increasing atmospheric lead exposure. It appears that the more the blood or urinary lead values of an individual deviate from the range of unexposed persons the greater is the likelihood that such an individual will have other evidence of lead induced bodily changes. Reticulocyte, stipple cell and polychromatophilia values correlated generally with atmospheric lead concentrations and blood and urinary lead values. Therefore these hematologic determinations are apparently of value for the periodic appraisal of employees exposed to hazardous concentrations of lead.

Albuminuria was twice as prevalent among the affected group as among the nonaffected workers. The greatest concentration of atmospheric lead occurred in pasting, oxide mixing, plate drying, plate finishing, plate repair, smelting and group assembly workrooms. Actual exposure of workmen is variable and may be reduced by various engineering practices: enclosure, good housekeeping, wet methods, local exhaust, improved general ventilation and respiratory devices. Periodic inspection of employees by the physician is essential for detecting early cases of poisoning, for calling attention to deficient control measures and for impressing on the employee the value of washing the hands before eating and the wearing of respirators.

Journal of Investigative Dermatology, Baltimore

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Skin Reacting Antigen of Trichophyton Purpureum. K. W. Thompson.—p. 475.

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New England Journal of Medicine, Boston

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South Carolina Medical Assn. Journal, Florence

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*Paralysis of Larynx: Study of 270 Cases. O. W. Suehs, Austin.—p. 665.
Expansion of Full Time County Health Unit: Its Relation to County Medical Society. R. L. Cherry, Austin.—p. 671.

Paralysis of Larynx.—From an analysis of 270 cases of paralysis of the vocal cords, Suehs concludes that the tension of the affected cord, rather than its position, is the best index as to the completeness of paralysis. The immobile cord was more often in the median line than in the cadaveric position in the series. The voice cannot be relied on as a criterion of paralysis, because when the tension of the cord is good the voice is often normal. This occurs even in bilateral abductor paralysis. Carcinoma, exclusive of the larynx, is the most frequent single cause of unilateral paralysis of the vocal cords, and thyroidectomy is the most common cause of bilateral abductor paralysis. Complete paralysis, with loss of tension of the cord, is most frequently encountered with infiltrating lesions such as carcinoma of the esophagus, lungs, trachea and thyroid gland and with conditions producing prolonged mechanical pressure or stretching, such as is exerted by an aneurysm. The paralysis is usually of the incomplete abductor type when the nerve is injured suddenly as in thyroidectomy. The left recurrent nerve is seemingly more susceptible to injury than the right, even when intrathoracic diseases are excluded. The prognosis for functional recovery is poor but appears best when no cause for the paralysis can be demonstrated.

Yale Journal of Biology and Medicine, New Haven

15:295-530 (Jan.) 1943. **Partial Index**

Routine Application of Concentration, Culture and Guinea Pig Inoculation for Demonstration of Tubercle Bacilli in Tuberculous Cases Under Treatment. W. H. Ordway, E. M. Medlar and K. T. Sasano, Mount McGregor, N. Y.—p. 353.
Prognostic Significance of Small Numbers of Tubercle Bacilli in Sputum, Detected by Concentration Smear Method. H. L. Sampson and F. H. Heise, Trudeau, N. Y.—p. 369.
Bacillary and Tuberculin Allergy and Their Relation to Specific Tuberculosis Immunity. H. J. Corper, Denver.—p. 373.
Vaccinating Properties of Avirulent Dissociates of Five Different Strains of Tubercle Bacilli. W. Steenken Jr. and L. U. Gardner, Trudeau, N. Y.—p. 393.
Prevention of Tuberculosis. A. Wallgren, Gothenburg, Sweden.—p. 411.
Tuberculosis Case Finding and Supervision. H. R. Edwards, New York.—p. 423.
Tuberculosis Among Students and Graduates of Schools of Law and Medicine. J. A. Myers, H. S. Diehl, Ruth E. Boynton and T. L. Streukens, Minneapolis.—p. 439.
Desensitization in Tuberculosis. H. S. Willis, Northville, Mich.—p. 453.
"Procutins" and "Anticutins." M. Pinner, M. Weiss and A. C. Cohen, Bedford Hills, N. Y.—p. 459.
Pregnancy and Tuberculosis. D. R. Lyman, Wallingford, Conn.—p. 465.
Roentgenologic Signs of Adhesive Pleuritis. J. L. Wilson, New Orleans.—p. 489.
*Penicillin in Suppurative Disease of Lungs: Report of 3 Cases. F. G. Blake and B. Craige Jr., New Haven, Conn.—p. 507.
Tuberculosis and Streptococcosis. G. F. Powers and P. L. Boisvert, New Haven, Conn.—p. 517.

Penicillin in Suppurative Pulmonary Disease.—Blake and Craige used penicillin in the treatment of 2 patients with staphylococcic and 1 with hemolytic streptococcus suppurative pulmonary disease. The clinical benefit amounting to cure experienced by the patients leads the authors to believe that further trial is warranted. Whether the cure of the active pulmonary infection in the patients will prove permanent remains to be seen by future follow-up, but the immediate response has been most satisfactory.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British J. Children's Diseases, Dorking, England

40:1-30 (Jan.-March) 1943

Hemophilus Influenzae Meningitis in Infant Treated with Sulfathiazole. D. Leys.—p. 1.

Sudden Death in Diphtheria. C. Neubauer.—p. 3.

British Medical Journal, London

1:371-402 (March 27) 1943

Standardized Plan of Treatment for Gastroenteritis in Infants. C. Elaine Field, D. MacCarthy and W. G. Wyllie.—p. 371.

Military Medicine in Middle East: Experience of 13,542 Cases. E. Bulmer.—p. 374.

Specific Identification of Chief Pathogenic Clostridia of Gas Gangrene. G. F. Petrie and Dorothy Steabben.—p. 377.

Trichlorethylene Anesthesia in Plastic Surgery. R. A. Gordon and R. P. W. Shackleton.—p. 380.

Note on Trichlorethylene Anesthesia. J. Haworth and A. Duff.—p. 381.

1:403-434 (April 3) 1943

Asthma in Childhood. A. Hurst.—p. 403.

Psychologic Factors in Asthma. C. H. Rogerson.—p. 406.

Treatment of Burns. J. M. Barnes.—p. 408.

Sulfaguanidine in Neonatal Epidemic Gastroenteritis. J. L. Henderson. —p. 410.

*Scabies Treated with One Application of Benzyl Benzoate. J. R. Graham. —p. 413.

Scabies Treated with Benzyl Benzoate.—Graham reports the results of one application of 20 per cent benzyl benzoate emulsion in 1,000 cases. On arrival at the treatment center, the patient's history is taken, the hands and wrists are examined and if possible a live mite is extracted and identified under the microscope. The patient then takes a hot bath, dries, and is painted from neck to soles with a 20 per cent benzyl benzoate emulsion by an attendant using a 2½ inch paint brush and paying particular attention to such areas as the gluteal folds. The emulsion is allowed to dry for five to ten minutes; the patient dresses and goes home and is told to return in a week's time for examination. At the reexamination a mite is extracted, if possible, and examined under the microscope to see whether it is alive or dead. (Live mites become quite active on a heated slide.) Inquiries are made regarding clinical symptoms and if necessary another treatment is given. If dermatitis exists it is treated with an ointment of ammoniated mercury. Patients are always instructed to return immediately when there is a recurrence of symptoms. Secondary infection is treated by the application of 2 per cent gentian violet. One treatment with benzyl benzoate will cure over 99 per cent of cases of scabies if efficiently applied. Disinfection of clothing and bedding is unnecessary.

Lancet, London

1:387-418 (March 27) 1943

*General and Local Administration of Penicillin. M. E. Florey and H. W. Florey.—p. 387.

*Sore and Bleeding Gums in Naval Personnel: Vitamin C and Nicotinic Acid Intakes. C. C. Ungley and J. S. F. Horton.—p. 397.

Quarantine in General Hospitals. M. Mitman.—p. 400.

Quarantine of Contacts: Waste of Time at Schools. R. E. Smith. —p. 401.

Photofluoroscope in Screen Photography. W. Griffel.—p. 401.

General and Local Administration of Penicillin.—The Floreys explored methods of using penicillin for the cure of infections by both general and local administration. Of 15 cases treated with penicillin by mouth or by intravenous or intramuscular injection, in 10 there was a staphylococcic infection, in 1 a sulfonamide resistant streptococcic meningitis, in 3 infection with Actinomyces or Streptothrix plus an anaerobic streptococcus, and in 1 a subacute bacterial endocarditis due to Streptococcus viridans. The staphylococcus cases comprised 1 of orbital infection, 4 of acute or subacute osteomyelitis, 3 of pyemia or septicemia, 1 of fulminating cavernous sinus thrombosis and 1 of chronic osteomyelitis; all ended in recovery, as also did the case of streptococcic meningitis. The 2 cases of actinomyces infection were not informative because the dosage was probably inadequate; in 1 case a streptothrix appeared to be eliminated. The subacute bacterial endocarditis improved during treatment but relapsed as soon as it was stopped. A generalized staphylococcic infection can be cured by penicillin, and local lesions heal during parenteral administration. The healing of bony lesions is particularly striking. In 4 staphylococcus cases the sensitivity of the organism to penicillin was tested before and after treatment; in 1 there was evidence of increased resistance. The most practical method of administration of the drug is by the intramuscular route at three hourly intervals. An endeavor has been made to regulate the dose so that the blood at all times contains at least enough penicillin to inhibit the growth of the infecting organism. This dose is about 15,000 Oxford units, but it varies from case to case. No toxic symptoms have been noted. Local penicillin treatment has been used in 172 infections of the eye and mastoid process, chronic wound sinuses and miscellaneous local septic conditions. In most cases staphylococci and streptococci were eliminated with subsequent healing. Penicillin is as yet available in only the smallest quantities.

Bleeding Gums.—Ungley and Horton inquired into the cause of sore and bleeding gums in the naval personnel. It was suspected that they might possibly be due to vitamin C deficiency. Fifty-one patients exhibiting the lesion were admitted to the hospital. Investigations included a search for clinical and other evidence of nutritional deficiency, clinical and bacteriologic examination of the mouth and throat, estimation of vitamin C intake, vitamin C saturation test and controlled therapeutic tests. The daily intake of ascorbic acid estimated from dietaries ranged from 16 to 80 mg. (average 37 mg.). The patients were "unsaturated" but no more so than healthy controls. Clinical evidence of scurvy or "subscurvy" was absent. Local causes, infections, calculus and the like were sufficient to account for the gum condition, and ascorbic acid was therapeutically ineffective. In this series vitamin C deficiency was not a prime cause of sore and bleeding gums. About 85 per cent of the patients had Vincent's stomatitis. No relation to nicotinic acid deficiency could be demonstrated.

1:419-448 (April 3) 1943

Acute Pyogenic Arthritis of Hip: Operation Giving Free Access and Effective Drainage. G. R. Girdlestone.—p. 419.

Experimental Traumatic "Shock": Factors Affecting Mortality and Effect of Therapeutic Agents (Ascorbic Acid and Nupercaine). G. Ungar.—p. 421.

*Rate of Blood Regeneration After Hemorrhage. S. Alstead.—p. 424.

Rapid Test for Serodiagnosis of Syphilis. F. Rappaport and F. Eichhorn.—p. 426.

Frequency of Micturition and Albuminuria in Service Patients. G. B. Mair.—p. 427.

Comparative Vitamin C Investigations in an Internment Camp. R. E. Flowerdew and O. B. Bode.—p. 428.

Determination of Peptic Activity. W. R. Hackett.—p. 430.

Rate of Blood Regeneration After Hemorrhage.—Alstead carried out venesection on 48 male subjects whose ages ranged between 27 and 92 years. Most patients were in the later decades of life, the average age being 60.3 years. The complaints for which they had been admitted to the hospital were of no significance in relation to blood regeneration. The 10 cases of hemiplegia were in convalescence. In none of the other cases was there a history of hemorrhage. Care was taken to exclude patients suffering from infection. The volume of blood withdrawn varied from 350 to 1,300 cc., the average being 710 cc. The rate of blood regeneration was determined by periodic estimation of the hemoglobin; the tests were done four or five times during the first week and then at longer intervals. After five weeks half the patients were still anemic, and even after fifteen weeks recovery was incomplete in 10 per cent of the cases. The volume of blood lost did not appear to determine the persistence of the anemia, but there was some evidence that the duration of the anemia was proportional to the initial fall in hemoglobin. It is suggested that the probable cause of the persistence of a low hemoglobin in some of the patients was overdilution of the blood by transference of excessive quantities of fluid from the tissue spaces.

Pediatría de las Américas, Mexico, D. F.

1:129-192 (March 15) 1943. **Partial Index**

Diagnosis of Appendicitis. R. M. del Campo.—p. 129.
*Therapy of Mucosanguineous Colitis by Sulfapyridine. R. Aguilar.—p. 134.
Allergic Diagnosis of Asthma in Children. W. Bustamante Espinoza.—p. 148.
Nasal Compression and Precordial Auscultation in Children. T. Ortiz Ramírez.—p. 165.

Sulfapyridine in Colitis.—Aguilar reports observations on a group of 28 children with acute and subacute mucosanguineous colitis which had developed in the course of various types of infection of the upper respiratory tract or in the course of otitis media. The pneumococcus was identified by the culture method from the feces of 18 and the streptococcus from the feces of 8 patients. Sulfapyridine was given in daily doses which varied between 0.1 and 0.15 Gm. for three consecutive days. The same therapy was practiced in a group of 100 children. The disease was rapidly controlled in all of the cases. No instances of intolerance to the drug were observed.

Revista Médica de Chile, Santiago

70:935-1002 (Dec.) 1942. **Partial Index**

Icterus of Neoplastic Origin: Comment on 22 Observations. H. Alessandri and H. Ducci.—p. 935.
Physiopathology of Sphincter of Oddi. F. G. Huidobro Toro.—p. 940.
*Critical Evaluation of 121 Cases of Endoscopic Resection of Prostate. I. Díaz Muñoz and A. Lira Valencia.—p. 947.
Studies on Volume of Blood During Pregnancy and in Arterial Hypertension. R. Gazmuri Ojeda and A. Denegri.—p. 956.
Clinical Aspects of Manganese Intoxications. F. Hermosilla Díaz and A. Roa.—p. 994.
Obstructive Jaundice Caused by Abdominal Hodgkin's Disease. E. Rios and E. Montero O.—p. 1001.

Transurethral Resection of the Prostate.—Díaz Muñoz and Lira Valencia present an analysis of 121 cases of transurethral resection of the prostate. In 2 cases resection was done for a congenital defect causing obstruction of the neck of the bladder. A perfect functional result was obtained. The second group included patients with acquired hypertrophy of the neck of the bladder either as the result of inflammation of the posterior urethra or as a sequel to previous intervention on the prostate. In this group there were no fatalities, and the functional results were good in all except 1. The third group comprised 67 patients in whom the hypertrophy involved chiefly the median lobe. These were selected patients, and the results were favorable. In patients of the fourth and fifth groups the lateral lobes were chiefly involved and in those of the sixth there was cancer of the prostate. In this last group transurethral resection is particularly indicated. Hemorrhage may be an immediate as well as a late complication. There were 6 of each in this series. Pulmonary or cerebral embolism did not occur. Various infections occurred, and they continue to constitute a serious problem. Repeated resections were necessary in some cases. X-ray examination of the kidney and pelvis should always precede the operation, since endoscopic resection is contraindicated in the presence of renal or prostatic lithiasis. A comparison of results obtained with this method and with the suprapubic operation revealed that the mortality over a course of four years was 13.2 per cent with prostatectomy and 11.1 per cent in resection. Neither method should be used exclusively; the surgeon must select the method best suited for the individual case. In many cases resection is less dangerous than the prostatectomy.

Semana Médica, Buenos Aires

49:1573-1620 (Dec. 31) 1942. **Partial Index**

Extensive Blastomycosis Originating in Soft Palate and Pulmonary Tuberculosis. S. L. Arauz, I. R. Steinberg and M. J. Carlone.—p. 1576.
*Convulsive Treatment by Electric Shock. G. Bosch, J. Montanaro and E. Pichon Riviere.—p. 1580.
Encephalography in Study of Acute Traumatisms and After Concussion. J. A. Ghersi.—p. 1586.
New Conception of Allergy. D. H. Negrete.—p. 1597.
"Tumor Previo" and Infected Abortion. J. L. Martini.—p. 1604.
Dupuytren's Contracture. J. Paolini Landa and R. C. Farina.—p. 1607.

Electric Shock Treatment.—Bosch and his associates show that Viale of Rosario, Argentina, originated the electric shock therapy later developed in Italy by Cerletti and Bini. The authors report 14 cases in which electric shock therapy was employed. The therapy was also used in combination with the insulin coma (method of summation of Georgi) and alternately with metrazol shock (von Braunmühl's method). Electric shock is a simple and practical method of treatment of all psychopathies. It can be employed by producing either complete crises or incomplete crises according to the authors' method. The latter are produced by applying the current for one twentieth of a second instead of one tenth. By employing the current for a shorter period the authors were able to suppress the apnea and reduce the time of awakening. Contraindications to metrazol therapy, such as myocardiac deficiencies, hypertension, febrile diseases, progressive tuberculosis, pregnancy, severe anemia and renal insufficiency, were observed in application of electric shock therapy. No serious accidents occurred. The incomplete crises have not as many contraindications as the complete crises and can be utilized for some patients with organic defects. The method has definite advantages over other methods of shock therapy. The aura is completely suppressed and there is amnesia as regards the crisis. It is more rapid and avoids the necessity of using syringes, needles and poor veins. The method proved particularly effective in stupors, melancholia and catatonia. These patients become much more amenable to other treatments, such as work therapy or psychotherapy. In the less fortunate cases the secondary symptoms disappeared and stimulation of the mental state became evident. Electric shock is also an excellent method of investigation which may advance our knowledge of epilepsy and its treatment.

50:1-64 (Jan. 7) 1943. **Partial Index**

New Observations on Prophylactic Intraperitoneal Sulfonamide Therapy in Obstetric Surgery. M. L. Pérez and R. Echevarria.—p. 2.
Parasitism with Fasciola Hepatica in Man: Case. D. E. Zabaleta and J. O. Laurito.—p. 5.
*Malignant Tumors of Kidney. G. Belchor.—p. 9.
Local Treatment of Infected War Wounds. E. Lluesma Uranga.—p. 18.
Basal Metabolism in Arterial Hypertension. C. A. Casullo.—p. 27.
Anomalies of Position of Kidney: Incomplete Rotation. L. D. Arruet.—p. 31.
Traumatism and Cancer. D. J. Stockdale.—p. 34.

Malignant Tumors of Kidney.—Belchor reviews the clinical course of 94 cases of malignant tumors of the kidney observed at the urologic clinic in Cleveland. In 59 of these the diagnosis was confirmed by microscopic examination of tissue obtained by nephrectomy, biopsy or necropsy. Renal tumors are more frequent in men than in women (2.35:1). Approximately 25 per cent presented hematuria, pain and palpable tumor, the classic triad of symptoms. Hematuria was the initial symptom in 35 per cent, while it developed later in 18 per cent. Pain in the renal region, particularly along the course of the ureter, was the initial symptom in 28 per cent; in 35 others pain was preceded by other symptoms. An abdominal tumor was the initial symptom in only 5 per cent, but in 42 per cent a renal tumor could be palpated during the physical examination. Weakness and loss of weight were the initial symptoms in 11 per cent. Less frequent initial symptoms are swelling of a testicle, fever, sciatica and swelling of the feet or legs. Hematuria is the most frequent symptom and always calls for a thorough examination of the urinary tract. Cystoscopy and retrograde pyelography are the most reliable diagnostic methods. The tumors in this series originated in the parenchyma in 47 and in the renal pelvis in 12. The percentage of hypernephromas was unusually high. The treatment must take into account the age and general condition of the patient and the stage of advancement of the tumor, particularly the presence of metastases. Early recognition, together with radical resection, are the most important factors in controlling the malignant renal tumors. In view of the many possible variations in the clinical picture, the ease with which these tumors spread to other organs and the technical difficulties in complete extirpation, these methods will not result in a large percentage of permanent cures. In a considerable number of cases life would be appreciably prolonged, and there is always a chance that a complete cure will ensue.

Book Notices

The Principles and Practice of War Surgery with Reference to the Biological Method of the Treatment of War Wounds and Fractures. By J. Trueta, M.D., Assistant Surgeon (E. M. S.), Wingfield-Morris Orthopaedic Hospital, Oxford, England. With introduction by Owen H. Wangensteen, M.D., Minneapolis, Minn. Cloth. Price, $6.50. Pp. 441, with 144 illustrations. St. Louis: C. V. Mosby Company, 1943.

The entire title must be made a part of the book review to attract attention to the point that Trueta rests his book on those fundamental principles of surgery by means of which the surgeon should obtain his results in the best possible manner and the patient his best recovery. Trueta's book enunciates these principles again, very well indeed, but he permits himself, as so many writers do, to be drawn aside into discussions of certain technical methods and chemical wound treatment which only serve to confuse the reader and lead him to employ details of treatment which disturb the patient and contribute little if anything to his defense against infection and his recovery.

In this book Trueta presents a program or technic which varies in certain details from the method proposed by Orr in 1923. But he says "It is to Friedrich and more particularly to Winnett Orr, who above all others lighted the path I have followed, that my gratitude is chiefly due. I have proclaimed this before, but there is no other or more fitting note on which I would wish to introduce this book."

Two recent writers, Ponseti and Puig, surgeons in Barcelona in 1938, have also discussed these methods in a paper in *Northwest Medicine* (**42**:73 [March] 1943). They begin: "One of the most important acquisitions in war surgery during our time was developed by the Spanish war experience. Statistics published by Trueta, D'Harcourt, Arguelles and Jimeno-Vidal show the best results obtained to the present time. Various technics were used by the different surgical schools, but a common characteristic was one which could be called 'the nonantiseptic treatment'; this is the complete discard of antiseptics as a treatment of wounds. Merely the strict observation of the basic principles of excision of the wound, immobilization and drainage sufficed to give the best results."

They continue: "The Orr method is something more than a treatment for osteomyelitis. It is something more than merely to apply a vaseline pack over a wound and cover it with a plaster cast. It is a general surgical program, based on a new and different understanding of the problem of wound infection and is applicable to all fields of surgery. The roots of the Orr method go deep into the biologic fundamentals of the inflammatory process."

With regard to this, Trueta says that in 1934 he had treated 40 cases of osteomyelitis with the Winnett Orr technic and it occurred to him that he could employ the method in other more serious kinds of bone and joint infection. It had obviously not come to the attention of Professor Trueta that by 1934 probably a hundred papers had been published on the use of the Orr method in all kinds of acute and chronic infections of bones and joints and that Orr's book had been published by Mosby in St. Louis on "The Treatment of Osteomyelitis and Compound Fractures and Other Infected Wounds by Drainage and Rest." This covered the entire field, which Trueta was only entering at that time.

Trueta's modifications of the immobilization, rest and infrequent dressing program consist chiefly, according to this book, in omitting the primary application of iodine as a clean-up antiseptic agent for skin and wound surfaces; discarding the use of the petrolatum gauze pack in favor of dry gauze and the use of drainage by suction. Otherwise his program seems to be about the same as when he began in 1934-1938. Trueta has never made as extensive use of fixation with skeletal devices in the plaster of paris cast as had already been employed for a number of years to insure correct length and position and immobilization during the postoperative period.

It seems a little strange now that, instead of iodine, Trueta advocates the use of the sulfonamides, both in the wound and constitutionally. Also in the light of his research with regard to the distribution of infection we should expect him to pay more rather than less attention to the importance of drainage and the protection of the wound against secondary infection. This last point arises because of his concessions in the discussion of primary and secondary wound closure. Any closure of infected wounds involves the risk of covering over or closing pockets of active or potential infection with all the dangers of flare-ups to which the patient is thus necessarily exposed. Trueta is inclined to assume, as many others have done, that the surgeon can guess how much and how virulent the infection is that still lies inside a wound cavity or even inside a joint and to permit any surgeon to take for the patient the risk involved in finding out by clinical experiment whether or not the patient can take care of such an infected area after it has been closed by sutures.

Primary adequate drainage with gradual closure of the wound from the bottom would seem on the whole to be a safer procedure under all conditions and circumstances.

Dr. Trueta's clinical experience both in Barcelona and since that time had been so successful before he used sulfonamides and without some of the other variations in the technic which he now employs that one finds it difficult to reconcile these later modifications with his previous experience. Any one who has treated more than a thousand cases of severe gunshot, shrapnel and other compound fracture injuries with only six deaths will find it difficult to improve on those results with sulfonamides, mobilization of neighboring joints in postoperative treatment, different kinds of drainage or other forms of wound or constitutional chemical therapy. It would seem better to adhere to such fundamentals as the primary clean-up of wounds, adequate drainage, immobilization in correct length and position and protection of the patient against irritative motion and damage to the wound surface. All of these are adequately and thoroughly recognized and described in Professor Trueta's book. He has done this so well that the variations in this program suggested by the introduction of various other details in technic would seem to be very much out of place. Moreover, the research in Barcelona and later in Oxford by Trueta and his predecessors and associates (see chapter IV) on the importance of immobilization in isolating infection in injured and infected extremities would seem to have rationalized so completely all of our teachings with regard to the value of immobilization in such cases that variation in this respect also would seem to be improper. We know as we never knew before how much depends on immobilization and correct position of all the parts in an infected or inflamed extremity—the muscles, nerves, blood vessels and lymph channels as well as the damaged bone and joint structure. This is essential to protect the patient against wound damage and the spread of infection and to assist him in his own efforts for both defense and recovery.

The remarks of Ponseti and Puig may well conclude this comment also: "Rest is one of the basic principles of the Orr method. Since rest is recognized as essential in the treatment of osseous lesions, the Orr method had sometimes been interpreted as applicable only to this sort of lesion. In reality the Orr method is applicable to every sort of infected wound, with or without involvement of the bones, although its advantages are most remarkable in the treatment of osteomyelitis, inasmuch as good drainage is more difficult to obtain in the osseous tissue. As is well known, Orr places extreme importance on the factor of rest. Thomas's watchword 'enforced, uninterrupted and prolonged rest' has perhaps never before been so carefully observed in practice as it has by Orr. The plaster immobilization applied by him is much more extensive than we have ever seen before. It has long been known that rest is favorable to the biologic defense process and that it is one of the basic conditions for tissue regeneration."

Trueta's book is a good book. It contains many suggestions of value for the military and civilian surgeon. But the book must be read with one's guard up against many of the innovations as to wound surgery and chemotherapy that threaten, as usual, to violate or vitiate methods that should always conform to principles and fundamentals. These can never be forgotten or ignored (like asepsis) even for a moment.

Exploring the Dangerous Trades: The Autobiography of Alice Hamilton, M.D. Cloth. Price, $3. Pp. 433, with illustrations by Norah Hamilton. Boston: Little, Brown and Company, 1943.

Dr. Hamilton is one of the great pioneers in industrial hygiene. Her autobiography is a readable, diary-like record of her experiences in industrial hygiene intermingled with her thoughts and actions outside her professional field. Deep sincerity and a consuming desire to improve the lot of her fellow human beings are the strong motivating forces of her life as revealed here. Dr. Hamilton is best known in medical circles for her pioneer discoveries in lead poisoning. Her work carried her also into other industries and the investigation of other industrial processes: copper, picric acid and the air hammer, for example; but lead has remained the recurring theme of Dr. Hamilton's professional life. Although she speaks frequently of employers who resisted reform measures, the facts as presented record a degree of cooperation from employers which, on the whole, was better than might have been expected. The book contains many commentaries on the contemporary scene and contemporary persons not medical in nature. Although one may disagree with many of Dr. Hamilton's interpretations of men or events, the nonmedical sections are fully as interesting as those dealing strictly with matters of industrial hygiene. One feature of the book which deserves special mention is the illustrations by Norah Hamilton, the author's sister. The book has much charm in addition to the factual information it conveys.

The Anatomy of the Nervous System from the Standpoint of Development and Function. By Stephen Walter Ranson, M.D., Ph.D. Seventh edition. Cloth. Price, $6.50. Pp. 520, with 408 illustrations. Philadelphia & London: W. B. Saunders Company, 1943.

This, the extensively revised seventh edition of one of the most widely read neurologic textbooks, was completed for press a few days before the death of its distinguished author, and the revision stands as a fitting memorial to one of the foremost experimental neurologists of our time. The Anatomy of the Nervous System first appeared in 1920 and it has been revised with systematic regularity at intervals of three to four years since its appearance; it is especially gratifying to learn from the publisher's foreword that Dr. Ranson, with his usual foresight, had selected Dr. Sam L. Clark, one of his former pupils, now professor of anatomy at Vanderbilt University, as his successor for future revisions. Few selections could have been more appropriate, and the new editions will be as eagerly sought after as those which have appeared during the past twenty-three years.

The successive editions of Ranson closely reflect Dr. Ranson himself and the development of his interests. He commenced his scientific career with his well known study of the nonmedullated fibers of the dorsal nerve roots (1911) and for many years his primary interests remained almost entirely in the sphere of neuroanatomic detail. In 1916 with Billingsley he began to study the vasomotor center. The first edition of his book, issued several years later, is almost wholly anatomic in emphasis with only occasional references to function; but Ranson had been stimulated by the vasomotor center and had begun to see the structural matrix of the nervous system in a more dynamic light. In the twenties he inaugurated studies on the physiology of posture, and thereafter problems of muscle tone began to slip into his textbook. After his appointment as director of the Neurological Institute at Northwestern in 1928 his interests became more and more dynamic, and during the last five years of his life his amazingly productive laboratory concerned itself almost wholly with studies of nervous function. For this reason the seventh edition has a new breath of life. In its pages we see Dr. Ranson with his many loyal student followers branching out in a dozen different directions translating anatomic facts into physiologic language. One finds an excellent but all too brief discussion of hypothalamic function; the cerebellum of Larsell and Dow has come into its own —indeed, Dr. Ranson gives the first adequate discussion of functional localization in the cerebellum to be found in any neuroanatomic textbook (other than that of Larsell). Similarly the extrapyramidal motor projections from the cerebral cortex have begun, but only just begun, to come into their own.

As usual, the book is admirably produced with many new and well selected illustrations. The book continues to be set in a 5 inch page, which, despite the length of line, is legible; but the text could be more compact and virtually as legible if there were less leading between lines and around illustrations, and general appearances could be improved by the choice of a blacker and bolder type face more suited for glazed paper. Cuts which have been old standbys from former editions no longer appear worn, and all evidently have been engraved anew. A minor criticism might be offered of figure 42, the illustration of the dermatomes, in which no attempt has been made to incorporate the exhaustive study of the dermatomes by the late Otfrid Foerster. Neurologists throughout the world will welcome this new edition coming at a time when the engines of war are heaping insults on all levels of the cerebrospinal axis as well as on peripheral nerve.

Transurethral Prostatectomy. By Reed M. Nesbit, M.D., F.A.C.S., Associate Professor of Surgery, University of Michigan Medical School, in Charge of the Section of Urology, Department of Surgery, Ann Arbor. A Chapter on the Vascular Supply of the Prostate Gland. By Rubin H. Flocks, M.D. Cloth. Price, $7.50. Pp. 192, with illustrations by William P. Didusch. Springfield, Illinois & Baltimore: Charles C Thomas, 1943.

This attractive monograph on an important urologic surgical procedure represents an authoritative compilation of all worthwhile essentials for good transurethral surgery on the obstructing prostate gland. The author makes no claims for originality but carefully explains that the technics and procedures are those employed in his first class university urologic department. As narrated by Dr. Nesbit, the technics may well be used by all urologists and the setup might be adopted by any well regulated urologic department. The initial chapter on arterial distribution within the prostate gland, by Rubin H. Flocks, is complete in anatomic detail and serves as a background for the author's transurethral surgical approach. The original illustrations of William P. Didusch are beautiful and so completely descriptive that any urologist could follow Dr. Nesbit's surgical technics with absolute accuracy. An important detail of surgical procedure is Dr. Nesbit's determination of blood loss at the time of operation. Immediate replacement by transfusion is advised, and the author cautions against waiting for indications by postoperative blood counts. The historical review of the surgical procedure is not only interesting but extremely detailed, and the author has completed the first comprehensive bibliography on all phases of transurethral surgery and its correlated phenomena. A few misspellings and several grammatical errors warrant more detailed proof reading by the author's university editorial assistant. Despite this modest defect, this monograph should be extremely useful to the expert resectionist and should be an accurate guide for those venturesome surgeons who must delve into this highly technical realm of an exact surgical specialty.

Mark Pfeiffer, M.D. By John Weld. Cloth. Price, $2.75. Pp. 324. New York: Charles Scribner's Sons, 1943.

Here is a novel typical of novels about doctors. It traces the career of a boy who is the son of a railway engineer in a typical small town Illinois family. In the interest of the family prestige the boy determines to become a physician. His ambitions cause him to disregard many of the social, moral and ethical values, so that he drives steadily forward to success as a surgeon. In this drive he passes through medical college in Chicago, an internship in the Cook County Hospital, an assistantship and finally a residency with a character poorly disguised but meant to reflect Harvey Cushing. The book is dedicated to Dr. Loyal Davis and no doubt the author has obtained must of his medical color from conversations with Dr. Davis. One character prominent in the book comes particularly to light; namely, the first wife of Mark Pfeiffer, who represents the rich playgirl type.

Doctors will find the book extraordinarily interesting because it tells about them and their work with the drama of a novel as the setting. There are many excellent reflections on the weakness as well as on the strength of medical practice. Certainly the writing by a professional novelist is well above the average of most works in this field. Compared, however, with Somerset Maugham's "Of Human Bondage," Francis Brett Young's "The Young Physician" or even some of Cronin's and Deeping's works, the book runs fifth.

Periodontia: A Study of the Histology, Physiology and Pathology of the Periodontium, and the Treatment of Its Diseases. By Henry M. Goldman, D.M.D., Instructor in Oral Pathology, Harvard School of Dental Medicine, Harvard University, Boston. Cloth. Price, $7.50. Pp. 407, with 310 illustrations. St. Louis: C. V. Mosby Company, 1942.

Diseases affecting the supporting tissues of human teeth are as old as the history of man. The pathology of periodontal diseases has been investigated only since the early 1920's, when Gottlieb published his observations on human necropsy material. The names of Kronfield, Orban and others are closely associated with this work. The many advances that have been made in the treatment of periodontium in recent years are well described and carefully enumerated. The illustrations are clear and each is well explained. Each illustration tells a definite and significant story.

Chapter 1 is devoted to examination. Items of special interest are laboratory tests, blood examination, basal metabolism and urinalysis. Chapter 2 considers the diagnosis made after careful examination of the different manifestations of periodontal disease so that a differential diagnosis may be made of well defined types. X-ray examination is valuable as an auxiliary means of diagnosis, using gutta-percha points to determine the depth of pockets. The disease then should be classified as to cause and progression, and the method and necessity of home care explained to the patient, in addition to the corrective care administered by the dentist.

Chapter 3 deals with etiology and stresses particularly traumatic occlusion, autointoxication and faulty diet. "Occlusal trauma is defined as a force in excess of that which can be borne by the tissues of the periodontium without injury. McLean describes three types of masticating derangement: interference with lateral and protrusive movements, performance of the masticating function in an eccentric relationship, which he calls convenience relationship and which may develop into a case of malocclusion, and centric interference, if the dentures strike on cusp ridges before sliding into centric position, with particular damage to the bone from the resulting anteroposterior thrust. McLean believes that cuspal interference causes shorter and more nearly vertical movements of the jaw in the shearing stroke and in extreme cases leads to so-called locked bite. Occlusal derangements, if existing for a long time, result in tooth wear and periodontal disease. The more the teeth resist wear, the greater the damage to the periodontium." This exemplifies the condensed and precise concentration of etiologic factors found throughout the book. Traumatic occlusion must be carefully considered as a primary cause of periodontal disease, as well as dietary and vitamin deficiencies. A bibliography at the end of the chapter contains many valuable references pertaining to all subjects discussed.

Chapter 4 takes up the pathology of periodontal disease, the knowledge of which is essential for scientific diagnosis and proper treatment. It gives a comparative picture of tissues, teeth and supporting structures from youth to old age. Again the subject of malocclusion and its effects is discussed in detail. Where a tooth is subjected to heavy stress the periodontal membrane becomes thicker, while a tooth that is out of function has a thinner periodontal membrane. Temporary or permanent damage may thus be caused.

The alveolar bone reacts to occlusal conditions. The physiology of tooth suspension and the alveolar bone is discussed to explain these changes and the possibility of injury to the alveolar bone because of occlusal trauma, sometimes causing resorption.

The main cause of gingival irritation is calculus. Other sources are overhanging fillings, faulty crowns and loss of contact. A fine differentiation of the three stages in periodontosis is described and pictured. The amount of discharge from a pocket depends on the degree of destruction of the crevicular epithelium and the amount of cellular infiltration of the subepithelial tissues. The depth of the pocket does not designate the amount of purulent discharge. A number of reference books are again named.

Chapter 5, the final chapter, is on treatment. The first recommendation is the employment of careful systematic routine methods, correlated with the diagnosis and the pathologic and etiologic factors. Objectives are restoration of gum tissues to a hard, firm, pink and healthy state, teeth firm and stable in sockets, foci of infection and hopeless teeth removed and the masticating mechanism rebuilt, correcting traumatic stresses. Methods of treatment for various conditions are described in detail, supplemented by pictures. It is sometimes necessary to employ orthodontic measures to move teeth to their proper functional position.

It is impossible for a review or summary to do justice to such an important and valuable book. It merits a careful study rather than a casual reading.

Essentials of Gynecology. By Willard R. Cooke, M.D., F.A.C.S., Professor and Head of the Department of Obstetrics and Gynecology, University of Texas, Galveston. Cloth. Price, $6.50. Pp. 474, with 197 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1943.

The author states in the preface that his object in this book is "to present concisely, from the practical viewpoint, and with as much correlation as possible, the salient features of the anatomy, pathology, symptomatology and therapy of gynecology." This he does successfully in most instances. However, on some subjects the material included is inadequate to meet the stated requirements.

Despite the fact that the book is intended primarily for general practitioners and medical students, the technic of bimanual examination is not presented, although other steps in the examination are. The section on anatomy, although brief, includes the more important features of pelvic structure and is clearly presented and adequately illustrated. The inclusion of a short chapter on psychologic factors and mode of life as related to gynecologic disease and frequent emphasis of the subject throughout the book is unusual in textbooks on gynecology. On the other hand, the author also attributes many psychoses and neuroses to the more common gynecologic lesions, such as cervicitis and pelvic inflammation.

The division of subject material and the grouping of disease entities is unusual and occasionally confusing. For instance in one chapter, on functional disturbances, are included normal intercourse, dyspareunia, menstrual disturbances, dysmenorrhea, neuroses and psychoses associated with menstruation, ovarian hyperfunction and hypofunction, sterility, contraception, therapeutic and spontaneous abortion and ectopic pregnancy. Infectious processes are divided into surface and invasive, neoplasms into benign and malignant epithelial and stromal; under each heading is discussed the disease process in each of the pelvic organs as contrasted with the more common presentations in which all conditions which may involve any one organ are discussed together. In the sections on preoperative and postoperative care are discussed the preparation of patients for operation and their care during the convalescence. Although the more common gynecologic operations are but briefly outlined, this is of little value to the student or general practitioner since there are no illustrations and the technical details are omitted.

The book is well illustrated both by line drawings and by photographs of pathologic material. Nearly all the illustrations are original, only a few having been reproduced from other published works. The photomicrographs, in most instances, are clear and show the tissue structure well. The publication of this book represents an excellent effort toward bridging the gap between the standard textbooks of gynecology and the outlines so commonly used by students.

Somatic and Endocrine Studies of Puberal and Adolescent Boys. By William Walter Greulich, Ph.D., and others. Monographs of the Society for Research in Child Development, Volume VII, No. 3 (Serial No. 33). Paper. Price, $1.50. Pp. 85, with illustrations. Washington, D. C.: Society for Research in Child Development, National Research Council, 1942.

This short monograph deals with the physical development of prepuberal and adolescent boys together with examinations of the urinary excretion of estrogens, androgens and gonadotropic hormones and correlation between the physical and laboratory studies. The monograph includes several plates illustrating differences in physical development in boys of the same and different chronologic ages. This study constitutes a useful contribution to the subject.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

BLOOD GROUPINGS AND PLASMA TRANSFUSION

To the Editor:—Persons belonging to type O (Landsteiner) are regarded as "universal' blood donors, and those belonging to type AB are "universal" recipients. In giving blood plasma, should not the reverse be true—with type AB the "universal" plasma donor and type O the "universal" recipient? If a burned patient with type AB loses most of his plasma into his tissues and receives massive plasma transfusions from any or all other groups, will the recipient's cells be agglutinated? It is my impression that burned patients receiving large quantities of plasma often die. Might not some of this mortality be the result of recipient red cell agglutination?

Harvard L. Romence, M.D., Springfield, Ill.

ANSWER.—The terminology suggested for plasma in the query cannot be accepted because it presupposes that the transfusion of agglutinable blood and plasma containing agglutinins active for the patient's cells may be equally harmful. Fundamentally the issues involved in a discussion of reactions to injections of plasma do not differ from those dealing with reactions following the use of universal group O blood for patients of groups A, B and AB. In both cases the question concerns the role of the action of the isoagglutinins injected. Experience has confirmed the validity of Ottenberg's suggestion made in 1911 that, by and large, the transfusion of universal donor blood to patients of groups A, B or AB can be carried out safely. Although isoagglutinins anti A and anti B capable of reacting with the patient's blood cells are administered in such a transfusion, the quantitative relationships are such that the foreign agglutinins are rendered inactive by dilution and specific absorption and inhibition.

In the usual transfusion of universal donor blood or of group O plasma, the comparatively small volume of 250 cc. is diluted in the patient's circulation so that in the final mixture the isoagglutinins are specifically inhibited by an excess of the patient's red blood cells. An additional factor of safety is the wide distribution of the A and B agglutinogens in tissue cells and body fluids including plasma. Since there is always an excess of these substances in the body, the injected agglutinins are rendered harmless by fixation.

There is a possibility of some danger in the indiscriminate use of universal donor blood or plasma if a very anemic patient of group A, B or AB is repeatedly transfused. In treating massive hemorrhage it may be safe to give one transfusion of group O blood. While this is being done attempts should be made to find donors of the same group as the patient, and subsequent transfusions should be carried out with homologous blood.

In administering plasma alone there are other considerations which make it unnecessary to perform compatibility tests. In the great majority of the hospitals pooled plasma is employed, so that the average pool is derived from individuals of groups O, A and, to a lesser degree, group B. Accordingly the dilution and the specific inhibition of the activity of the agglutinin make it possible to administer the plasma indiscriminately, i. e. without employing preliminary compatibility tests. Even if one uses plasma not derived from pools, blood grouping and compatibility tests are nevertheless not necessary. In using this material or in the administration of group O blood an additional factor of safety is the slow administration so that the active agglutinins are immediately diluted and specifically inactivated by the patient's red cells, body fluids and other tissue cells.

More specifically, a group AB patient suffering from burns will have a relative excess of red blood cells which can readily absorb the agglutinins in the injected plasma, particularly if administered slowly. The advantages of pooled plasma for a case of this sort are obvious. Should additional precautionary measures be desirable, one may add the Witebsky group A and B inhibiting substances to the plasma. Judging, however, from the low incidence of reactions following the use of plasma, there does not seem to be any real indication at the present time for the use of these substances.

If the fatality incidence of burned patients receiving large quantities of plasma is high, this may be attributed to causes other than the administration of plasma.

RECURRENT ERYSIPELAS-LIKE ERUPTIONS

To the Editor:—At the age of 21 in 1934 a white man, then a college student, was taken suddenly ill with fever (101 F.), malaise and headache. Chilly sensations accompanied this picture. This episode occurred in April of that year and began suddenly in the evening. Early the next morning he awoke, feeling worse, but now he noticed a bright red shiny, well outlined area on the tibial surface of his right leg at the junction of the middle and lower thirds. There was a painful right inguinal adenitis but no evidence of varicosities, lymphangitis or thrombophlebitis. There was no antecedent history of an abrasion or infection of the leg. He suffered a mild tricophytosis, but this was not infected and was of the sodden, scaly interdigital type. He was put to bed and ointment of ichthammol was applied. Within thirty-six hours his fever had abated and, although somewhat stiff, he was able to walk. Within three days he was feeling well. At the end of the third day all evidence of active inflammation had disappeared and the inguinal glands were no longer palpable. For about two months the area remained red as long as he stood on it and, when elevated, would become a rusty brown. Telangiectatic vessels were seen for a while, and occasionally small petechiae were present. Within four months complete resolution had occurred and he experienced no further difficulties. He finished college, completed medical school and was in the third year of his internship when the exact repetition of the episode occurred. The history was identical, both as to time of the year, time of day, onset, appearance, distribution of the lesion, course and recovery period. This time the lesion was treated with continuous hot wet dressings of magnesium sulfate. He recovered in the usual time and was symptom free until March 1, 1943. At this time a sudden onset of chilly sensations, fever and malaise without evidences of coryza or sore throat made him suspicious of a recurrence of the old trouble. Again the course of symptoms, the appearance of the lesion and its distribution, along with the accompanying adenitis, exactly duplicated previous episodes. This time he was treated with sulfadiazine (2 Gm. every four hours for three doses, then 1 Gm. every four hours) and resolution took place in about thirty-six hours, the same as with the previously treated attacks for which heat and ichthammol were used, each with measurable success. In one instance (the second recurrence) a leukocyte count was performed which showed a total of 14,000. No additional laboratory studies have ever been done. This is to me obviously a localized erysipeloid type of cellulitis, but I have never heard of the recurrence of specific symptoms and the recurrence of the lesion in exactly the same location, with the course of the febrile period of thirty-six hours being unaffected by the therapy used. Please comment on this problem as to a specific name or entity, if known, the probable reasons for recurrence in the same locality without evidence of antecedent infection (except the mild epidermophytosis) and any recommendations for either prophylaxis of probable future attacks or for therapy, should another occur.

M.D., Maryland.

ANSWER.—Cases of this kind are not uncommon. They occur usually on the face or extremities and are often responsible for localized elephantiasis the result of oft repeated attacks. Most of them, if not all, are due to infection with streptococci and they are referred to as recurrent erysipelas or erysipelas-like eruptions. J. L. McGlasson (Recurrent Erysipelas of the Legs with Dermatitis of the Feet, *Arch. Dermat. & Syph.* **14**:679 [Dec.] 1926) called attention to the frequency with which such cases are associated with dermatitis of the feet. Traub and Tolmach (Erysipelas-like Eruption Complicating Dermatophytosis, THE JOURNAL, June 26, 1937, p. 2187) reported a series of such cases and because of the association with foot infection stated their belief that they are dermatophytids. Sulzberger, Rosenberg and Goetze (Recurrent Erysipelas-like Manifestations of the Legs, *ibid.*, p. 2189) reported some experimental research in such cases and concluded that at least some of them are dermatophytids, eruptions caused by fungi. This conclusion is not accepted by most dermatologists. Goeckerman and Wilhelm (Recurrent Lymphangitis, *California & West. Med.* **55**:251 [Nov.] 1941) adhere to the general belief that they are of streptococcic origin and report that they found streptococci in the tissues just as in erysipelas but that the process is a deeper one than true erysipelas and therefore should be called lymphangitis.

The rate of recurrence varies widely, some persons having attacks every week or two, others being fortunate enough to have their recurrences at long intervals. Cases are recorded in which there have been thirty attacks during a period of years. Most of them are mild with little or no fever, but the disease may at any time become severe. Delbanco and Callomen (*Handb. d. Haut u. Geschlkr.* 9/1, p. 17, 1929) cite the case of Hertz and Widal in which after many mild attacks a severe one, even endangering the life of the patient, occurred. Goeckerman and Wilhelm observed a case which at first was confined to the legs; then after some years of recurrence the hands also became involved and then the attacks were accompanied by a widespread, almost generalized, oozing, crusting, fissuring and scaling dermatitis which cleared up promptly as the local process resolved after each attack.

The infection takes place through atriums furnished by other disease or trauma, on the feet often through the openings caused by the disease usually ascribed to ringworm infection, on the hands sometimes secondary to other forms of dermatitis, as the case of McGlasson consequent to procaine dermatitis, and on the face usually through small breaks in the skin or mucous membranes of the nose or mouth.

To explain the recurrence limited to a particular site, even though plenty of atriums are present through which other sites

can be infected, it seems necessary to assume that the infection remains latent over long periods, flaring up when local resistance is lowered. Goeckerman and Wilhelm explain this as follows: "A change in the patient's immunity has taken place, confining the activity of germs to a restricted area of the lymphatic bed and from there they act much like a focus of infection in the tonsils or teeth. . . . In our observation, acute exacerbations are usually brought about by trauma, exposure, overwork, exhaustion or improper hygiene." Others have reported that recurrences seem to be prevented by attention to the prevention of the openings in the skin through which infections may take place. This does not agree with the theory of recurrence, but it may be that attention to the local skin condition was accompanied by care to prevent other causes of lowered resistance. Roentgen rays and ultraviolet light are beneficial to true erysipelas and may be found of value in preventing the recurrences of the lymphangitis under discussion. The same physical measures may be tried in the effort to hasten the resolution of the attacks, if others occur; but it is doubtful whether any therapy can shorten the record already set.

TECHNIC OF AURAMINE STAIN FOR TUBERCLE BACILLI

***To the Editor:*—Will you please send me the formula and directions for using the auramine stain for tuberculosis?**

Clifford W. Atherton, M.D., Farmington, Ill.

ANSWER.—O. W. Richards, E. K. Kline and R. E. Leach (*Am. Rev. Tuberc.* **44**:255 [Sept.] 1941) of the Spencer Lens Company use a monocular microscope with light rich in ultraviolet rays passed through a blue ultraviolet transmitting filter, reflected through the microscope from an aluminum surfaced mirror and finally passed through a yellow contrast filter placed in the eyepiece. Smears should preferably be made with fresh sputum. Procedure: 1. Make direct smears of sputum or of sputum concentrate on glass slides and fix by heat in the usual manner. 2. Stain for two to three minutes with a solution of 0.3 per cent auramine in 3 per cent phenol (carbolic acid) solution at room temperature. 3. Wash with water. 4. Decolorize with a solution of 0.5 per cent concentrated hydrochloride acid and 0.5 per cent sodium chloride in 70 per cent alcohol for one minute, pour off and add fresh decolorizer for two additional minutes. 5. Rinse, dry and examine. Almost any concentration of auramine will give the desired result; as little as 0.05 per cent of dye may be used. The concentration of phenol may also be reduced. Satisfactory results have been obtained with 0.5 per cent auramine in 2 per cent phenol. The auramine is dissolved with gentle heat but the stain becomes cloudy on cooling. Cloudy solutions are just as satisfactory as clear ones, but they should be shaken just before using. The stain, after a number of weeks, gradually loses some of its fluorescent properties. Smears of known positive sputums should be used as check on the dye. Emil Bogen (*ibid.*, p. 267) says that a simple mercury vapor lamp or high powered filament bulb may suffice and uses an ordinary bacteriologic microscope. The thinly smeared sputum slides are stained by any acid fast staining technic except that the carbol-fuchsin is replaced by auramine: One gram of pure auramine powder is placed in a flask; one gradually adds 1,000 cc. of distilled water, shaking vigorously until it is completely dissolved, and then adds 50 cc. of pure liquefied phenol and again shakes the flask. A temporary clouding later settles out, leaving a clear yellow solution which keeps a long time in the dark. The Hermann procedure is followed at Olive View Sanatorium: 1. Fix with heat. 2. Flood with auramine solution and steam five minutes. 3. Wash in running water. 4. Decolorize in 70 per cent alcohol containing 3 per cent hydrochloric acid until the preparation is colorless. 5. Wash in running water. 6. Dip in a 0.1 per cent aqueous solution of potassium permanganate (this solution remains usable for about a week after turning brown). 7. Wash in running water. 8. Dip in Loeffler's alkaline methylene blue solution. 9. Wash in running water. 10. Dry and examine with the fluorescence microscope. The Chicago Branch Laboratory of the Illinois State Health Department (Lind, H. E., and Shaughnessy, H. J.: *J. Lab. & Clin. Med.* **27**:531 [Jan.] 1942) use (1) a monocular microscope, (2) an 8 mm. objective and a 20 × ocular or a 1.8 mm. objective and a 6 × ocular, (3) a low voltage high amperage light source, such as a Universal microscope lamp of 6.5 volts and 2.75 amperes with clear bulb and transformer (numbers 351 and 353 lamps are suitable), (4) a blue ultraviolet transmitting filter in front of the light source, (5) an aluminum surfaced mirror in front of the microscope mirror and (6) a yellow filter placed in the ocular (this is a complementary filter necessary to see the acid fast bacteria, which fluoresce to appear yellow). The staining solution is composed of 0.1 Gm. of auramine O (National Aniline Company), 3 cc. of liquefied phenol and 97 cc. of distilled water. The decolorizing solution is 100 cc. of 70 per cent alcohol, 0.5 cc. of concentrated hydrochloric acid and 0.5 Gm. of sodium chloride. There is no counterstain. Smears are made as usual and fixed by heat, auramine is applied for two minutes, washed and decolorized with acid alcohol for two to four minutes and then redecolorized in a fresh solution of acid alcohol at least two minutes and again washed and dried. Individual staining is preferred. There is no danger of overdecolorizing, but there is trouble when decolorization is insufficient. The acid fast bacilli appear as small bright yellow bacilli against a dark background.

EFFECTS OF BLOOD TRANSFUSION ON BONE MARROW

***To the Editor:*—Does a single blood transfusion have any effect on the bone marrow of the recipient? Do repeated transfusions have any effect on the bone marrow of the recipient? Do repeated small transfusions have any effect on the bone marrow of the recipient? If the production of red cells in the bone marrow as stated is either stimulated or depressed, are there any exceptions?**

M.D., Connecticut.

ANSWER.—In animal experiments it has been found that bleedings stimulate erythropoiesis while transfusions depress it, and it would appear that the same holds true in man. The reason for this is that the most important factor in erythropoiesis is the oxygen tension of the bone marrow, low tensions having a stimulating effect while high tensions have a depressing effect. For example, Reinhard, Moore, Dubach and Wade (Effect of Breathing 80 to 100 per Cent Oxygen on the Erythrocyte Equilibrium in Patients with Sickle Cell Anemia, abstr. THE JOURNAL, April 10, 1943, p. 1245) found that in patients with active sickle cell anemia with pronounced reticulocytosis the breathing of 80 to 100 per cent oxygen caused the reticulocyte count to drop from 20 to 30 per cent to as low as 1 per cent, and there was a concomitant drop in the erythrocyte count. When the oxygen was discontinued the reticulocytes reappeared, accompanied by a shower of normoblasts and a rise in the red cell count.

A contrasting example is the polycythemia of mountain sickness. An exception to the depressing effect of blood transfusion on the bone marrow is seen in pernicious anemia, in which transfusions were often observed in the past to bring about remissions in the disease. This, however, should not be attributed to the action of the blood per se but rather to its function as a vehicle, by virtue of which blood transfusion may serve also to transfer vitamins, hormones and other factors active in minute amounts. Obviously the vitamin or hormone itself, if available, would be much more effective than a blood transfusion in such cases; and, in fact, liver has displaced blood transfusion in the therapy of pernicious anemia except in severe untreated cases, in which blood transfusions are still of value to tide the patient over until the liver therapy takes effect (Wiener, A. S.: Blood Groups and Blood Transfusion, ed. 3, Springfield, Illinois and Baltimore, Charles C Thomas, 1943, pp. 77 and 85).

TRANSVERSE VERSUS VERTICAL ABDOMINAL INCISION

***To the Editor:*—How does the transverse abdominal transection of the recti (W. Meyer) compare with the usual vertical incisions in frequency of postoperative herniation or other complications and sequelae (adhesions, paralytic ileus and so on)?**

Isadore I. Rosen, Captain, M. C., A. U. S.

ANSWER.—Although the transverse abdominal incision has not become popular, those who employ it are unanimous as to certain of its advantages. Sectioning of one or both rectus muscles has no serious anatomic or physiologic sequelae. The muscle when healed simply presents an extratendinous intersection. Cleavage lines in the abdominal wall assume a generally transverse direction. It is argued that any incision that parallels the fleshy and aponeurotic fibers will be the one that causes the least structural and physiologic damage. Good examples of such incisions in the lower part of the abdomen are the McBurney and the Pfannenstiel modified by Maylard. The transverse incision in the upper part of the abdomen is least likely to cause injury to the intercostal nerves which supply the abdominal parietes. A vertical incision that passes through or laterally to the rectus muscle will denervate whatever tissue lies medially to that. This frequently results in atrophy of the muscle. Sloan has estimated that the lateral pull of the flat abdominal muscles, the external oblique, the internal oblique and the transversalis is between 30 and 50 pounds. With a vertical incision this energy would be applied to the wound disruption, whereas with a transverse incision the muscle pull aids in closing the incision. The nerves cut across in a vertical incision are hyperirritable in the early postoperative period. In a subconscious effort to minimize pain, the patient splints his abdomen, thus restricting the diaphragmatic excursion, which in turn leads to decreased vital capacity, anoxia and pulmonary

atelectasis. Mansfield and Lich employed the transverse incision in both the upper and the lower part of the abdomen for a period of one and one-half years. They did not have a single instance of postoperative hernia or even of weakening of the abdominal wall in spite of the fact that in several of their patients the wound was the seat of a rather severe infection with prolonged healing. Hunter did not have a single wound disruption or postoperative hernia in 570 gynecologic operations in which a lower transverse abdominal incision was employed. While no definite report on the subject is to be found in the literature, the consensus as to the occurrence of postoperative adhesions after these incisions is that it is much less frequent than with the longitudinal incisions. Sloan believes that this is due to the fact that the nerve supply of the abdominal wall remains intact. If this is true the occurrence of postoperative ileus should also be a rare complication.

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FULMINATING MENINGOCOCCIC MENINGITIS (WATERHOUSE-FRIDERICHSEN SYNDROME) WITH ADRENAL GLAND HEMORRHAGE

To the Editor:—**Is there any explanation for the occurrence of hemorrhage into the adrenal glands in cases of Waterhouse-Friderichsen syndrome? Why should these structures, rather than other parts of the body, be the site of hemorrhage?**

Lieutenant Colonel, M. C., A. U. S.

ANSWER.—The Waterhouse-Friderichsen syndrome by definition (Dorland's American Illustrated Medical Dictionary) refers to the fulminating or apoplectic form of meningococcic cerebrospinal meningitis in which death occurs within a few hours and meningeal symptoms have scarcely had time to develop or, commencing, are cut short by simultaneous meningococcus invasion of the medulla of the adrenal glands with hemorrhages. Meningococci are in the blood stream and hemorrhages occur in many tissues of the body as well as in the adrenal glands. Extensive spontaneous hemorrhages into one or both adrenal glands without adequate explanation occur not infrequently in newborn infants; they are much less frequent in adults. In some of those cases in adults, not associated with meningococcic infection, bacteria have been demonstrated in the capillaries and hemorrhagic tissues of the adrenal glands. The hemorrhages in the adrenal glands in patients with meningococcic or other bacterial septicemia apparently result from the local effects of the bacteria in the tissues. The hemorrhagic destruction of adrenal gland tissues vital to the host is probably much more serious than the coincident hemorrhages in less vital tissues elsewhere in the body. There may be, however, some dispute in ascribing the cause of death to the septicemia or to the extensive hemorrhagic destruction of the adrenal glands. The former probably is the *causa propria* and the latter the *causa proxima*.

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DIETHYLSTILBESTROL FOR SURGICALLY CASTRATED PATIENT

To the Editor:—**A married woman aged 24 had a bilateral oophorectomy for dermoids in 1939. The uterus was not removed. For the past two years she has been taking oral diethylstilbestrol (1.5 to 3 mg. daily) for control of menopausal symptoms. Every six to ten weeks she has been directed to discontinue therapy for several days to allow uterine bleeding. On resuming treatment she usually experiences nausea with occasional vomiting and diarrhea. Is it necessary to continue periodic uterine bleeding? If so, why, and how frequently? Will a hysterectomy eventually be necessary? Are liver function tests or other procedures to determine toxicity advisable in a case such as this which will require estrogenic therapy for many years?**

M.D., California.

ANSWER.—For a patient surgically castrated, estrogens are primarily intended to relieve the symptoms of the menopause. There is little use in producing cyclic bleeding except when such patients are anxious to have menses for psychologic reasons. The dose of estrogens should be lowered to the minimal amount which will afford relief of the subjective symptoms and there will be little likelihood of inducing uterine bleeding. The bleeding resulting from estrogen administration is not harmful as long as it is not excessive in amount and a hysterectomy is inadvisable. The average dose of diethylstilbestrol is 0.5 to 1 mg. daily.

The nausea and other gastrointestinal reactions obtained with diethylstilbestrol therapy are not indications of irritation or damage to tissues such as the liver. These side reactions are now considered to be systemic in origin as the result of rapid absorption into the blood stream. When the absorption is delayed, as with the use of diethylstilbestrol dipropionate or dipalmitate, there is a lowered incidence of side reactions. Decreasing the dose of the estrogen will also lessen the incidence of unpleasant reactions (Freed, S. C.; Eisin, W. M., and Greenhill, J. P.: The Therapeutic Use of Diethylstilbestrol Esters, THE JOURNAL, Aug. 22, 1942, p. 1412).

CARE OF PERMANENT ILEOSTOMY

To the Editor:—**There was a question concerning the care of colostomy and an answer in Queries and Minor Notes (The Journal, Sept. 14, 1940, p. 953) but I have been unable to find information concerning the care of permanent ileostomy which presents the problems of a movement of continuous and watery drainage and of a constantly raw and irritated skin around the opening. Is it possible to use any type of plug which may be inserted into the opening and which may be removed periodically? Also are there any new types of cups which protect the skin? Is aluminum powder the best thing to protect the skin? Should the diet be the same as with colostomy patients? Are enemas indicated?**

F. L. Neely, M.D., New York.

ANSWER.—A permanent ileostomy should not be treated by using enemas. It should be protected by the use of a cup which has an opening just large enough to let the ileostomy protrude into it so that it can collect the liquid material in a bag which can be evacuated once a day. Such a bag should be united to the skin by a rubber plastic which will hold the bag firmly in place and protect the skin. If the skin edges become irritated, aluminum powder is excellent. If they become raw and excoriated, the patient should lie on his stomach in bed on a split mattress for a couple of days so that the ileostomy may leak directly into a basin. This will allow the skin to become normal again and then it can be treated by aluminum powder and by the kind of cup indicated.

VIABILITY OF SPERMATOZOA AFTER ENCEPHALITIS

To the Editor:—**Some time ago a young man had an attack of acute epidemic encephalitis. Recently he had a fresh specimen of semen examined to determine fertility. There were few spermatozoa and those present were nonmotile. Would such a condition be likely to follow an attack of encephalitis? No venereal history or other infection was admitted to account for the condition.**

M.D., Illinois.

ANSWER.—As far as is known at present, an attack of acute epidemic encephalitis would not have an effect on the viability of spermatozoa. As long as a few spermatozoa were present, even though nonmotile, the chances are that subsequent examination may reveal motility and greater numbers. If the oligospermia with absent motility persists, the use of gonadotropic substances might be of benefit.

INCIDENCE OF GOITER SINCE INSTITUTION OF IODINE PROPHYLAXIS

To the Editor:—**Will you please tell me, if possible, where I can get the following information: Where is goiter most prevalent at present in the United States? Has there been a decrease or increase in the incidence of goiter since the discovery of thyroxin by Kendall, Dec. 25, 1914?**

P. H. Owens, M.D., Kansas City, Mo.

ANSWER.—Good statistics have not been published on the incidence of goiter throughout the country since iodine has been used extensively for prophylaxis. There is no doubt, however, that the incidence of nontoxic goiter has been greatly reduced since iodine has been used for this purpose. It has, of course, dropped since Kendall's discovery of thyroxin in 1914. However, the incidence of toxic goiter has been but little affected by the prophylactic use of iodine.

ODOR ASSOCIATED WITH ADVANCED CANCER

To the Editor:—**In Queries and Minor Notes in The Journal, May 15, 1943, I read the note from Dr. Morton L. Levin, Albany, N. Y., with regard to odor associated with advanced cancer. In the Jefferson Davis Hospital, Houston, Texas, we have found an additional medicament that will control the odor, especially the odor from advanced carcinoma of the cervix. The treatment is reasonable in cost and easy to apply. The mixture is made up in tablet form. The tablets contain equal parts of dextrose and lactose, boric acid and tartaric acid to make a p_H of 2.9, and an organic iodide (5-7 diiodo-8-hydroxyquinoline). The iodine also helps to control the odor. Two to four tablets placed within the vagina two or three times a day control the odor well. This acidulated dextrose-lactose-iodine mixture eliminates the secondary infection which is in most cases the cause of the odor and often greatly relieves the pain.**

Karl John Karnaky, M.D., Houston, Texas.